SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: Gregg Cantelmo Examiner #: 75777 Date: 4/30/04
Art Unit: 1745 Phone Number 30 571 272 1285 Serial Number: 10/034388
Mail Box and Bldg/Room Location: REM 6B71 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

****

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: _____

Inventors (please provide full names): _____

20

Earliest Priority Filing Date: _____

***For Sequence Searches Only** Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.*

SEE ATTACHED

(Tried to print out closest art first.)

****

STAFF USE ONLY	**Type of Search**		**Vendors and cost where applicable**	
Searcher: EJ	NA Sequence (#)		STN	$
Searcher Phone #:	AA Sequence (#)		Dialog	
Searcher Location:	Structure (#)	(3)	Questel/Orbit	
Date Searcher Picked Up:	Bibliographic	(and 2)	Dr.Link	
Date Completed: 5-1-04	Litigation		Lexis/Nexis	
Searcher Prep & Review Time: 10	Fulltext		Sequence Systems	
Clerical Prep Time:	Patent Family		WWW/Internet	
Online Time: 145	Other		Other (specify)	

STIC Search Report
EIC 1700

STIC Database Tracking Number: 120559

TO: Gregg Cantelmo
Location: 6B71
Art Unit : 1745
May 3, 2004

Case Serial Number: 09/700988

From: Barba Koroma
Location: EIC 1700
REM EO4 A30
Phone: 571 272 2546

barba.koroma@uspto.gov

Search Notes

Examiner Cantelmo,
Please find attached results of the search you requested. Various components of the claimed invention as spelt out in the claims were searched in multiple databases. For your convenience, titles of hits have been listed to help you peruse the results set quickly. This is followed by a detailed printout of records. Please let me know if you have any questions.
Thanks.

SEARCH TIPS:

FOCUS SEARCH ON THE MEMBRANE COMPOSITION. INITIALLY LIMIT SEARCH TO BATTERIES / ELECTROCHEMICAL CELLS. DEPENDING ON THE DEPTH OF THIS SEARCH YOU MAY WANT TO SEARCH THE MEMBRANE ITSELF.

HOT-MELT ADHESIVE (MOLTEN) EXAMPLES:
- POLY(ETHYLENE VINYL ACETATE)
- POLY (ETHYLENE ALKYL ACRYLATE)
- SPECIFICATION FURTHER INCORPORATES OTHER EXAMPLES CITED IN USPAT 4487891.

TACKIFIER EXAMPLES:
- ESCOREZ
- PVDF-HFP

PLASTIC EXAMPLES: SEE CLAIM 24

FILLER EXAMPLES: SEE CLAIM 16.

10/034,388

Please amend the claims as follows:

1-13. (Cancel)

14. (Currently Amended) A battery comprising (1) at least one positive electrode, (2) at least one negative electrode, (3) an electrolyte, and (4) a homogeneous microporous membrane comprising (a) a hot-melt adhesive, (b) an engineering plastics, (c) optionally a tackifier and (d) optionally a filler.

15. (Currently Amended) The battery of claim 14, wherein the microporous membrane [[further comprising]] comprises a tackifier, in an amount up to about 50% by weight, selected from the group consisting of a hydrocarbon resin and poly(vinylidene fluoride-hexafluoropropene).

16. (Currently Amended) The battery of claim 14, wherein the microporous membrane [[further comprising]] comprises a filler having an average particle size of less than about 50μm, in an amount up to about 50% by weight, selected from the group consisting of fumed silica, alumina, titanium dioxide, molecular sieve, calcium carbonate, calcium silicate, glass, ceramic material and polytetrafluoroethylene.

17. (Currently Amended) The battery of claim 14, wherein [[the]] at least one positive electrode is a lithium-ion positive electrode.

18. (Currently Amended) The battery of claim 14, wherein [[the]] at least one negative electrode is a lithium-ion negative electrode,

19. (Original) The battery of claim 14, wherein the electrolyte is a lithium-ion electrolyte.

20. (Original) The battery of claim 19, wherein lithium-ion electrolyte is a liquid lithium-ion electrolyte or a polymer lithium-ion electrolyte.

21. (New) The battery of claim 14, wherein said microporous membrane is bound onto a surface of said electrodes by heat activation.

22. (New) The battery of claim 14, wherein the hot-melt adhesive is poly(ethylene-vinyl acetate) having a weight content of vinyl acetate from about 25% to about 90%, and from about 10% to about 75% weight of ethylene.

23. (New) The battery of claim 14, wherein the hot-melt adhesive is poly(ethylene-alkyl acrylate) having a weight content of alkyl acrylate from about 10% to about 30% and wherein the alkyl group preferably comprises from one to about five carbon atoms.

24. (New) The battery of claim 14, wherein the engineering plastics is selected from the group consisting of polyimides, polyether imides, polysulfone, polyether sulfones, polyaryl sulfones, polyether ketones, polyether ether ketones, polyphenylene sulfides, polyarylates, polybutylene terephthalate, polystyrene, polystyrene-maleic anhydride, polychlorofluoroethane, polycarbonate, and poly(styrene-methyl methacrylate) or a combination thereof.

25. (New) A battery comprising (1) at least one positive electrode, (2) at least one negative electrode, (3) an electrolyte, and (4) a microporous membrane comprising (a) a hot-melt adhesive, (b) an engineering plastics, (c) a tackifier and (d) optionally a filler.

* * *

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=> file reg
FILE 'REGISTRY' ENTERED AT 12:31:11 ON 04 MAY 2004
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
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=> display history full l1-

     FILE 'HCA' ENTERED AT 09:30:35 ON 04 MAY 2004
L1       193838 SEA BATTERY OR BATTERIES OR (ELECTROCHEM? OR ELECTROLY?
                OR GALVANI? OR WET OR DRY OR PRIMARY OR SECONDARY)(2A)(CE
                LL OR CELLS) OR WETCELL? OR DRYCELL?
L2        58230 SEA (PORO? OR MICROPORO? OR NANOPORO? OR PORE# OR
                MICROPORE# OR NANOPORE# OR PERMEA? OR PERFORAT? OR
                PERVIOUS? OR SEMIPORO? OR SEMIPERMEA?)(2A)MEMBRAN?
L3         8314 SEA (HOTMELT? OR HOT(2A)(MELT? OR MOLTEN? OR FUSION? OR
                FUSE# OR FUSING#))(3A)(ADHES? OR GLUE# OR GLUEING# OR
                GLUING#)
L4       568840 SEA PLASTIC? OR THERMOPLASTIC?
L5        22603 SEA TACK?
L6       128530 SEA FILLER?
L7         2366 SEA L1 AND L2
L8           79 SEA HOMOG?(3A)L2
L9            4 SEA L1 AND L8
L10           4 SEA L7 AND L3
L11         193 SEA L7 AND L4
L12           4 SEA L7 AND L5
L13          42 SEA L7 AND L6
L14          17 SEA L11 AND L13
L15      375202 SEA ADHES? OR GLUE# OR GLUING# OR GLUEING#
L16           4 SEA L14 AND L15
L17        2860 SEA (ENG# OR ENGINEER?)(2A)(PLASTIC? OR THERMOPLASTIC?)
L18           3 SEA L7 AND L17

     FILE 'REGISTRY' ENTERED AT 09:49:05 ON 04 MAY 2004
L19        9330 SEA (C(L)H)/ELS (L) 2/ELC.SUB AND PMS/CI
                E VINYLIDENE FLUORIDE/CN
L20           1 SEA "VINYLIDENE FLUORIDE"/CN
                D RN
L21        2043 SEA 75-38-7/CRN
                E HEXAFLUOROPROPENE/CN
L22           1 SEA HEXAFLUOROPROPENE/CN
                D RN
L23        1637 SEA 116-15-4/CRN
L24         589 SEA L21 AND L23
L25           3 SEA L24 AND 2/NC
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                E SILICA/CN
L26           1 SEA SILICA/CN
                E ALUMINA/CN
L27           1 SEA ALUMINA/CN
                E TITANIUM DIOXIDE/CN
L28           1 SEA "TITANIUM DIOXIDE"/CN
                E CALCIUM CARBONATE/CN
L29           1 SEA "CALCIUM CARBONATE"/CN
                E CALCIUM SILICATE/CN
L30           1 SEA "CALCIUM SILICATE"/CN

     FILE 'HCA' ENTERED AT 11:08:38 ON 04 MAY 2004
L31      444758 SEA L19 OR HYDROCARBON?(2A)RESIN?
L32        3235 SEA L25 OR PVDF(2A)HFP
L33        7769 SEA (L26 OR (SILICON OR SI)(W)(OXIDE# OR DIOXIDE#) OR
                SILICA# OR SIO2)(2A)(FUME# OR FUMING#)
L34      460999 SEA L27 OR (ALUMINUM# OR AL)(W)(OXIDE# OR TRIOXIDE#) OR
                ALUMINA# OR AL2O3
L35      215756 SEA L28 OR (TITANIUM# OR TI)(W)(OXIDE# OR DIOXIDE#) OR
                TITANIA# OR TIO2
L36       23621 SEA (MOL# OR MOLECULAR?)(2A)SIEVE#
L37      116877 SEA L29 OR (CALCIUM# OR CA)(W)CARBONATE# OR CACO3
L38       19055 SEA L30 OR (CALCIUM# OR CA)(W)SILICATE# OR CASIO3 OR
                CA2SIO4 OR CA3SIO5
L39      676126 SEA GLASS?
L40      288146 SEA CERAMIC?

     FILE 'REGISTRY' ENTERED AT 11:21:34 ON 04 MAY 2004
                E ETHYLENE/CN
L41           1 SEA ETHYLENE/CN
                D RN
L42       12873 SEA 74-85-1/CRN
                E VINYL ACETATE/CN
L43           1 SEA "VINYL ACETATE"/CN
                D RN
L44       13427 SEA 108-05-4/CRN
L45        1952 SEA L42 AND L44
L46           6 SEA L45 AND 2/NC
                E METHYL ACRYLATE/CN
L47           1 SEA "METHYL ACRYLATE"/CN
                E ETHYL ACRYLATE/CN
L48           1 SEA "ETHYL ACRYLATE"/CN
                E PROPYL ACRYLATE/CN
L49           1 SEA "PROPYL ACRYLATE"/CN
                E ISOPROPYL ACRYLATE/CN
L50           1 SEA "ISOPROPYL ACRYLATE"/CN
                E BUTYL ACRYLATE/CN
L51           1 SEA "BUTYL ACRYLATE"/CN
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                E ISOBUTYL ACRYLATE/CN
L52           1 SEA "ISOBUTYL ACRYLATE"/CN
                E SEC-BUTYL ACRYLATE/CN
L53           1 SEA "SEC-BUTYL ACRYLATE"/CN
                E TERT-BUTYL ACRYLATE/CN
L54           1 SEA "TERT-BUTYL ACRYLATE"/CN
L55           8 SEA (L47 OR L48 OR L49 OR L50 OR L51 OR L52 OR L53 OR
                L54)
                SEL L55 1-8 RN
                EDIT E1-E8 /BI /CRN
L56       68232 SEA (106-63-8/CRN OR 140-88-5/CRN OR 141-32-2/CRN OR
L57        1764 SEA L56 AND L42
L58          18 SEA L57 AND 2/NC

     FILE 'HCA' ENTERED AT 11:30:42 ON 04 MAY 2004
L59       34545 SEA L46
L60        6355 SEA L58

     FILE 'LCA' ENTERED AT 11:31:09 ON 04 MAY 2004
L61         131 SEA POLYIMIDE# OR POLY(A)IMIDE# OR POLYETHERIMIDE# OR
                POLYIMIDEETHER# OR POLYETHER#(A)IMIDE# OR POLYIMIDE#(A)ET
                HER# OR POLYSULFONE# OR POLY(A)SULFONE# OR POLYETHERSULFO
                NE# OR POLYSULFONEETHER# OR POLYETHER#(A)SULFONE# OR
                POLYSULFONE#(A)ETHER#
L62           3 SEA POLYARYLSULFONE# OR POLYBENZENESULFONE# OR POLYSULFON
                E#(A)(ARYL# OR BENZENE#) OR (POLYARYL# OR POLYBENZENE#)(A
                )SULFONE# OR POLYETHERKETONE# OR POLYKETONEETHER# OR
                POLYETHER#(A)KETONE# OR POLYKETONE#(A)ETHER# OR POLYPHENY
                LENESULFIDE# OR POLYPHENYLENE#(A)SULFIDE#
L63         145 SEA POLYARYLATE# OR POLY(A)ARYLATE# OR POLYCARBONATE# OR
                POLY(A)CARBONATE#

     FILE 'REGISTRY' ENTERED AT 11:41:28 ON 04 MAY 2004
                E POLYBUTYLENE TEREPHTHALATE/CN

     FILE 'LCA' ENTERED AT 11:42:25 ON 04 MAY 2004
L64          16 SEA POLYBUTYLENE#(A)TEREPHTHALATE#

     FILE 'REGISTRY' ENTERED AT 11:43:26 ON 04 MAY 2004
L65           1 SEA 24968-12-5
                E POLYSTYRENE/CN
L66           1 SEA POLYSTYRENE/CN
                E POLYSTYRENE-MALEIC ANHYDRIDE/CN
                E STYRENE-MALEIC ANHYDRIDE/CN
L67           1 SEA "STYRENE-MALEIC ANHYDRIDE COPOLYMER"/CN
                E POLYCHLOROFLUOROETHANE/CN
                E CHLOROFLUOROETHANE POLYMER/CN
                E STYRENE-METHYL METHACRYLATE/CN
```

L68 1 SEA "STYRENE-METHYL METHACRYLATE COPOLYMER"/CN

FILE 'LCA' ENTERED AT 11:46:09 ON 04 MAY 2004
L69 427 SEA L65 OR POLYBUTYLENETEREPHTHALATE# OR POLYBUTYLENE#(A) TEREPHTHALATE# OR POLYSTYRENE# OR POLY(W)STYRENE# OR L66 OR L67 OR POLYCHLOROFLUOROETHANE# OR POLYFLUOROCHLOROETHANE# OR L68

FILE 'HCA' ENTERED AT 11:52:06 ON 04 MAY 2004
L70 278929 SEA L61 OR L62 OR L63 OR L69
L71 484 SEA L7 AND L31
L72 43 SEA L7 AND L32
L73 319 SEA L7 AND (L6 OR L33 OR L34 OR L35 OR L36 OR L37 OR L38 OR L39 OR L40)
L74 10 SEA L7 AND (L3 OR L59)
L75 6 SEA L7 AND (L3 OR L60)
L76 162 SEA L7 AND (L17 OR L70)
L77 11 SEA L71 AND L72
L78 52 SEA L71 AND L73
L79 12 SEA L72 AND L73
L80 48 SEA L71 AND L76
L81 4 SEA L72 AND L76
L82 37 SEA L73 AND L76
L83 11 SEA L80 AND L82
L84 15786 SEA L1 AND MEMBRAN?
L85 6 SEA L84 AND L3
L86 619 SEA L84 AND L4
L87 10 SEA L84 AND L5
L88 112 SEA L84 AND L6
L89 34 SEA L86 AND L88
L90 998 SEA L84 AND L31
L91 103 SEA L84 AND L32
L92 1519 SEA L84 AND (L6 OR L33 OR L34 OR L35 OR L36 OR L37 OR L38 OR L39 OR L40)
L93 25 SEA L84 AND (L3 OR L59)
L94 10 SEA L84 AND (L3 OR L60)
L95 602 SEA L84 AND (L17 OR L70)
L96 34 SEA L86 AND L88
L97 169 SEA L86 AND L90
L98 36 SEA L86 AND L91
L99 133 SEA L86 AND L92
L100 7 SEA L86 AND L93
L101 71 SEA L86 AND L95
L102 31 SEA L88 AND L90
L103 12 SEA L88 AND L91
L104 112 SEA L88 AND L92
L105 4 SEA L88 AND L93
L106 20 SEA L88 AND L95

L107 20 SEA L90 AND L91
L108 145 SEA L90 AND L92
L109 14 SEA L90 AND L93
L110 180 SEA L90 AND L95
L111 24 SEA L91 AND L92
L112 5 SEA L91 AND L93
L113 13 SEA L91 AND L95
L114 54 SEA L84 AND (L5 OR L31 OR L32) AND (L6 OR L33 OR L34 OR
L115 4 SEA L114 AND (L3 OR L59 OR L60)
L116 7 SEA L114 AND L15
L117 33 SEA L9 OR L10 OR L12 OR L16 OR L18 OR L74 OR L75 OR L81
L118 34 SEA (L77 OR L79 OR L83 OR L109 OR L113) NOT L117
L119 30 SEA L117 AND (1907-2001/PRY OR 1907-2001/PY)
L120 30 SEA L118 AND (1907-2001/PRY OR 1907-2001/PY)

=> file hca
FILE 'HCA' ENTERED AT 12:31:54 ON 04 MAY 2004
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=> d l119 1-30 cbib abs hitstr hitind

L119 ANSWER 1 OF 30 HCA COPYRIGHT 2004 ACS on STN
139:304112 Hemoglobin sensor. Hodges, Alastair; Chatelier, Ron; Beck, Thomas (Lifescan, Inc., USA). U.S. US 6632349 B1 20031014, 11 pp., Cont.-in-part of U.S. Ser. No. 314,251. (English). CODEN: USXXAM. APPLICATION: US 2000-616512 20000714. PRIORITY: WO 1996-AU724 19961115; WO 1996-AU723 19961115; US 1997-852804 19970507; US 1999-68828 19990315; US 1999-314251 19990518.

AB The present invention relates to a device and method for measuring Hb in a fluid sample. The device comprises a disposable **electrochem. cell**, such as a thin layer **electrochem. cell**, contg. a reagent capable of being reduced by Hb. A suitable fluid sample that may be analyzed according the present invention is whole blood. If the Hb to be analyzed is present in red blood cells, a lysing agent may be added to the sample to release the Hb prior to anal.

IT **9003-53-6, Polystyrene**
(Hb sensor)

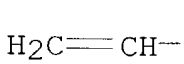
RN 9003-53-6 HCA

CN Benzene, ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 100-42-5

CMF C8 H8



IC ICM G01N027-327
NCL 205792000; 205777500; 204403010; 204403020; 156292000
CC 9-1 (Biochemical Methods)
IT **Adhesives**
(Chem. cured; Hb sensor)
IT **Electrochemical cells**
(Disposable; Hb sensor)
IT **Fillers**
(Fibrous; Hb sensor)
IT **Adhesion**, physical
Adhesives
Blood analysis
Buffers
Chemical potential
Communication
Electric current
Electric potential
Electrodes
Erythrocyte
Fluids
Gravure printing
Ink-jet printing
Interface
Lithography
Materials
Mathematical methods
Measuring apparatus
Mixtures
Reaction
Reduction
Samples
Screen printing
Sensors
Sputtering
Vapor deposition process
(Hb sensor)
IT Carbonates, analysis
Hemoglobins
Metals, analysis
Noble metals
Phosphates, analysis
Polycarbonates, analysis
Polyesters, analysis

Polymers, analysis
Polyolefins
Quinones
Salts, analysis
Saponins
(Hb sensor)

IT **Adhesives**
(Heat cured; Hb sensor)

IT **Adhesives**
(Hot flow; Hb sensor)

IT **Membranes**, nonbiological
(Macroporous; Hb sensor)

IT **Electrochemical cells**
(Thin layer; Hb sensor)

IT **Adhesives**
(**hot-melt**; Hb sensor)

IT **Adhesives**
(pressure-sensitive; Hb sensor)

IT 57-09-0, Cetyltrimethylammonium bromide 77-92-9D, Citric acid, salts 151-21-3, Sodium dodecyl sulfate, analysis 517-60-2D, Mellitic acid, salts 956-48-9, Dichlorophenolindophenol 1314-62-1, Vanadium oxide, analysis 7439-97-6, Mercury, analysis 7440-06-4, Platinum, analysis 7546-30-7, Mercurous chloride 7783-36-0, Mercurous sulfate 7783-90-6, Silver chloride, analysis 7783-96-2, Silver iodide 7785-23-1, Silver bromide 9001-62-1, Lipase 9001-92-7, Proteolytic enzyme **9003-53-6**, **Polystyrene** 9063-89-2 13408-62-3, Ferricyanide 13907-47-6, Dichromate 14265-44-2, Phosphate, analysis 14333-13-2, Permanganate 25038-59-9, Polyethylene terephthalate, analysis
(Hb sensor)

L119 ANSWER 2 OF 30 HCA COPYRIGHT 2004 ACS on STN
139:181198 **Microporous membrane** comprising a **hot-melt adhesive** and its uses in **batteries**. Sun, Luying (USA). U.S. Pat. Appl. Publ. US 2003157408 A1 20030824, 10 pp. (English). CODEN: USXXCO. APPLICATION: US 2001-34388 20011228.

AB A **microporous membrane** comprises (a) a **hot-melt adhesive**, (b) an **engineering plastic**, (c) optionally a **tackifier** and (d) optionally a **filler**. The **microporous membrane** is useful in, e.g., **batteries**, super capacitors, fuel cells, sensors, electrochromic devices or the like. A **microporous membrane** was prepd. from poly(ethylene-vinyl acetate), Escorez 2596, and **polysulfone** dissolved in THF.

IT **9011-17-0**, Solef 20810 **24937-78-8**, EVA

10/034,388

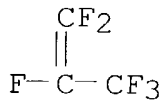
Instant Applicator

25034-86-0, Methyl methacrylate-styrene copolymer (**microporous membrane** comprising a **hot-melt adhesive** and its uses in **batteries**)

RN 9011-17-0 HCA
CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)

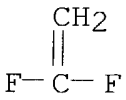
CM 1

CRN 116-15-4
CMF C3 F6



CM 2

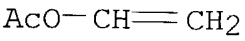
CRN 75-38-7
CMF C2 H2 F2



RN 24937-78-8 HCA
CN Acetic acid ethenyl ester, polymer with ethene (9CI) (CA INDEX NAME)

CM 1

CRN 108-05-4
CMF C4 H6 O2



CM 2

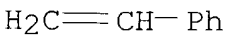
CRN 74-85-1
CMF C2 H4

I.A.

RN 25034-86-0 HCA
CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with ethenylbenzene (9CI) (CA INDEX NAME)

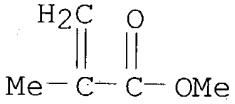
CM 1

CRN 100-42-5
CMF C8 H8



CM 2

CRN 80-62-6
CMF C5 H8 O2



IC ICM H01M002-16
NCL 429249000; 429217000; 429212000
CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 52
ST **microporous membrane hot melt adhesive battery**
IT **Plastics**, uses
(**engineering; microporous membrane** comprising a **hot-melt adhesive** and its uses in **batteries**)
IT **Adhesives**
(**hot-melt; microporous membrane** comprising a **hot-melt adhesive** and its uses in **batteries**)
IT **Battery** electrodes
Tackifiers
(**microporous membrane** comprising a **hot-melt adhesive** and its uses in **batteries**)
IT **Polysulfones**, uses
(**microporous membrane** comprising a

I. App

hot-melt adhesive and its uses in **batteries**)

IT **Membranes**, nonbiological
(**microporous; microporous membrane** comprising a **hot-melt adhesive** and its uses in **batteries**)

IT 7550-35-8, Lithium bromide
(electrolyte; **microporous membrane** comprising a **hot-melt adhesive** and its uses in **batteries**)

IT 9011-14-7, Poly(methyl methacrylate) **9011-17-0**, Solef 20810 **24937-78-8**, EVA **25034-86-0**, Methyl methacrylate-styrene copolymer 177529-80-5, Escorez 2596 223610-55-7, Escorez 5690 484686-78-4, Solef 21216 500217-25-4, RTP #905
(**microporous membrane** comprising a **hot-melt adhesive** and its uses in **batteries**)

I.A.

L119 ANSWER 3 OF 30 HCA COPYRIGHT 2004 ACS on STN
139:152384 Lithium-ion **battery** using heat-activatable **microporous membrane**. Sun, Luying (USA). U.S. Pat. Appl. Publ. US 2003152828 A1 20030814, 13 pp., Cont.-in-part of U.S. 6,527,955. (English). CODEN: USXXCO. APPLICATION: US 2002-320062 20021217. PRIORITY: US 2001-34494 20011228.

AB The present application discloses a lithium-ion **battery** using heat-activatable **microporous membrane** which comprises a **hot-melt adhesive**, an **engineering plastics**, a **tackifier** and a **filler**. It also discloses methods of prepg. such **microporous membrane** and the lithium-ion **batteries**. The **battery** built with the use of the **microporous membrane** of the present invention shows high rate capability, long cycle life, and low as well as stable impedance during charge-discharge cycling. The **microporous membrane** of the present invention also shows thermal shutdown behavior.

ODP Mark of record

IT **9002-88-4D**, Polyethylene, copolymer with alkyl acrylate **24937-78-8**, Ethylene-vinyl acetate copolymer
(**adhesive**; lithium-ion **battery** using heat-activatable **microporous membrane**)

RN 9002-88-4 HCA
CN Ethene, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 74-85-1
CMF C2 H4

$H_2C{=}CH_2$

RN 24937-78-8 HCA
CN Acetic acid ethenyl ester, polymer with ethene (9CI) (CA INDEX NAME)

CM 1

CRN 108-05-4
CMF C4 H6 O2

$AcO{-}CH{=}CH_2$

CM 2

CRN 74-85-1
CMF C2 H4

$H_2C{=}CH_2$

IT **7631-86-9, Fumed silica,** uses
(colloidal; lithium-ion **battery** using heat-activatable **microporous membrane**)
RN 7631-86-9 HCA
CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

$O{=}Si{=}O$

IT **25034-86-0,** Methyl methacrylate-styrene copolymer
(lithium-ion **battery** using heat-activatable **microporous membrane**)
RN 25034-86-0 HCA
CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with ethenylbenzene (9CI) (CA INDEX NAME)

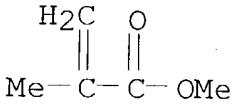
CM 1

CRN 100-42-5
CMF C8 H8

$H_2C{=}CH{-}Ph$

CM 2

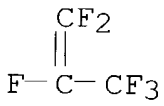
CRN 80-62-6
CMF C5 H8 O2



IT **9011-17-0**, Hexafluoropropylene-vinylidene fluoridecopolymer
(**tackifier**; lithium-ion **battery** using
heat-activatable **microporous membrane**)
RN 9011-17-0 HCA
CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene
(9CI) (CA INDEX NAME)

CM 1

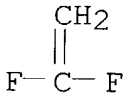
CRN 116-15-4
CMF C3 F6



ODP '828 Ref

CM 2

CRN 75-38-7
CMF C2 H2 F2



IC ICM H01M002-16
ICS H01M002-18; H01M004-58; H01M010-50; H01M010-40
NCL 429142000; 429144000; 429231950; 429253000; 429062000; 029623100;
029623200
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST lithium ion **battery** use heat activatable
microporous membrane

IT Polyesters, uses
(acrylates, copolymer with polyethylene; lithium-ion **battery** using heat-activatable **microporous membrane**)
IT **Hydrocarbons**, uses
(alicyclic, **resins**, hydrogenated, **tackifier**; lithium-ion **battery** using heat-activatable **microporous membrane**)
IT **Adhesives**
(**hot-melt**; lithium-ion **battery** using heat-activatable **microporous membrane**)
IT Pore size
Porosity
Primary **battery** separators
Secondary **battery** separators
(lithium-ion **battery** using heat-activatable **microporous membrane**)
IT **Polycarbonates**, uses
Polysulfones, uses
(lithium-ion **battery** using heat-activatable **microporous membrane**)
IT Secondary **batteries**
(lithium; lithium-ion **battery** using heat-activatable **microporous membrane**)
IT **Membranes**, nonbiological
(**microporous**; lithium-ion **battery** using heat-activatable **microporous membrane**)
IT Terpenes, uses
(polymers, **tackifier**; lithium-ion **battery** using heat-activatable **microporous membrane**)
IT **Hydrocarbons**, uses
(**resins**, arom. modified, **tackifier**; lithium-ion **battery** using heat-activatable **microporous membrane**)
IT Rosin
(resins, **tackifier**; lithium-ion **battery** using heat-activatable **microporous membrane**)
IT Polyesters, uses
(substrate; lithium-ion **battery** using heat-activatable **microporous membrane**)
IT **9002-88-4D**, Polyethylene, copolymer with alkyl acrylate
24937-78-8, Ethylene-vinyl acetate copolymer
(**adhesive**; lithium-ion **battery** using heat-activatable **microporous membrane**)
IT **7631-86-9**, **Fumed silica**, uses
(colloidal; lithium-ion **battery** using heat-activatable **microporous membrane**)
IT 68-12-2, Dmf, uses 78-93-3, Methyl ethyl ketone, uses 108-32-7,

ODP '828 RJ

Propylene carbonate 872-50-4, 1-Methyl-2-pyrrolidinone, uses 7550-35-8, Lithium bromide (LiBr) 9011-14-7, Pmma 24991-55-7, Polyethylene glycol dimethyl ether 25037-45-0, Poly(bisphenol-A carbonate) 221658-52-2, UltrasonS6010 500217-25-4, RTP 905
(lithium-ion **battery** using heat-activatable **microporous membrane**)

IT **25034-86-0**, Methyl methacrylate-styrene copolymer
(lithium-ion **battery** using heat-activatable **microporous membrane**)

IT 25038-59-9, Mylar, uses
(substrate; lithium-ion **battery** using heat-activatable **microporous membrane**)

IT **9011-17-0**, Hexafluoropropylene-vinylidene fluoridecopolymer 177529-80-5, Escorez 2596 223610-55-7, Escorez 5690 484686-78-4, Solef 21216
(**tackifier**; lithium-ion **battery** using heat-activatable **microporous membrane**)

L119 ANSWER 4 OF 30 HCA COPYRIGHT 2004 ACS on STN

138:305286 Manufacture of branched polyarylene polymers with high toughness, their sulfonated products, and proton-conducting **membranes**. Takahashi, Masayuki; Yamakawa, Yoshitaka; Futami, Satoshi; Goto, Kohei (JSR Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2003113226 A2 20030418, 21 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2001-307430 20011003.

AB The branched polyarylene polymers are manufd. by copolymn. of (A) monomers contg. XC6R4AC6R4X (X = Cl, Br, I; A = electron-withdrawing group; R = H, F, alkyl, fluoroalkyl), XC6R4AC6R4OC6R4AC6R4X, and/or X(C6R4AC6R4B)nC6R4AC6R4X (B = electron-donating group, divalent group; n ≥2) and (B) monomers contg. X2C6R3A(C6R4B)mZ (Z = aryl; m = 0, 1, 2), X-p-C6R4X, X-p-C6R4-p-C6R4X, and/or 1,3-X-disubstituted C6R4 in the presence of (C) branching agents contg. C6R'5AC6R'5 (R' = H, Cl, Br, I, F, alkyl, fluoroalkyl, ≥3 of R' = Cl, Br, I), C6R'5AC6R'4OC6R'4AC6R'5, R'(C6R'4AC6R'4B)nC6R'4AC6R'5, C6R'6, and/or C6R'5C6R'5. The proton-conducting **membranes**, useful for **battery** electrolytes, etc., are prepd. by sulfonation of the branched polyarylene polymers with sulfonating agents. Thus, polymn. of 2,5-dichloro-4-phenoxybenzophenone 178, 2,4,4'-trichlorobenzophenone 2.0, 4,4'-dichlorobenzophenone 16, and 4-chlorobenzophenone 4.0 mmol gave a copolymer with Mw 146,000, which was sulfonated, dissolved in 1:1 vol NMP and methanol, cast, and dried to give a film with no **tackiness** and good surface smoothness.

IC ICM C08G061-12
ICS C08J005-18; H01B001-06; H01M008-02; H01M006-18; H01M010-40; C08L065-00

CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 52

ST branch polyarylene polyether polyketone proton conducting **membrane**; chlorophenoxybenzophenone chlorobenzophenone polymer sulfonation **battery** electrode

IT **Battery** electrolytes
(manuf. of sulfonated branched polyarylene polymers with high toughness for proton-conducting **membranes**)

IT Polyketones
(polyether-, fluorine-contg.; manuf. of sulfonated branched polyarylene polymers with high toughness for proton-conducting **membranes**)

IT Polyketones
(polyether-; manuf. of sulfonated branched polyarylene polymers with high toughness for proton-conducting **membranes**)

IT Fluoropolymers, uses
(polyether-polyketone-; manuf. of sulfonated branched polyarylene polymers with high toughness for proton-conducting **membranes**)

IT Polyethers, uses
(polyketone-, fluorine-contg.; manuf. of sulfonated branched polyarylene polymers with high toughness for proton-conducting **membranes**)

IT Polyethers, uses
(polyketone-; manuf. of sulfonated branched polyarylene polymers with high toughness for proton-conducting **membranes**)

IT Ionic conductors
(protonic; manuf. of sulfonated branched polyarylene polymers with high toughness for proton-conducting **membranes**)

IT 69266-28-0P 122325-09-1P, 4,4'-Dichlorobenzophenone-hexafluorobisphenol A copolymer
(manuf. of sulfonated branched polyarylene polymers with high toughness for proton-conducting **membranes**)

IT 134-85-0DP, 4-Chlorobenzophenone, reaction products with polyarylene-polyether-polyketones, sulfonated 509075-82-5DP, reaction products with chlorobenzophenone, sulfonated 509075-83-6DP, reaction products with chlorobenzophenone, sulfonated 509075-84-7DP, reaction products with chlorobenzophenone, sulfonated
(manuf. of sulfonated branched polyarylene polymers with high toughness for proton-conducting **membranes**)

L119 ANSWER 5 OF 30 HCA COPYRIGHT 2004 ACS on STN
138:207821 Heat-activatable **microporous membrane** and its uses in **batteries**. Sun, Luying (Policell Technologies, Inc., USA). U.S. US 6527955 B1 20030304, 10 pp. (English). CODEN: USXXAM. APPLICATION: US 2001-34494 20011228.

AB The invention concerns a novel **microporous membrane** comprising a **hot-melt adhesive** and an **engineering plastics**, the methods of prepg. such **microporous membrane**

ODP 6,527955
T.D. filed in T. App

and the uses of the **microporous membrane** in, e.g., **batteries**, supercapacitors, fuel cells, sensors, electrochromic devices or the like.

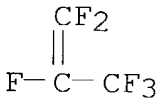
IT **9011-17-0**, Hexafluoropropene-vinylidene fluoride copolymer (Solef 20810; heat-activatable **microporous membrane** and its uses in **batteries**)

RN 9011-17-0 HCA

CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)

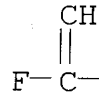
CM 1

CRN 116-15-4
CMF C3 F6



CM 2

CRN 75-38-7
CMF C2 H2 F2



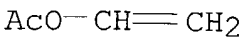
IT **24937-78-8**, Ethylene-vinyl acetate copolymer (**adhesive**; heat-activatable **microporous membrane** and its uses in **batteries**)

RN 24937-78-8 HCA

CN Acetic acid ethenyl ester, polymer with ethene (9CI) (CA INDEX NAME)

CM 1

CRN 108-05-4
CMF C4 H6 O2

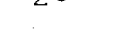


CM 2

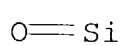
ODP to 1953 Sun

T.D. filed in I. App

CRN 74-85-1
CMF C2 H4

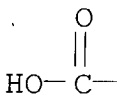


IT **7631-86-9, Fumed silica,** uses
(colloidal, **filler;** heat-activatable **microporous membrane** and its uses in **batteries**)
RN 7631-86-9 HCA
CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

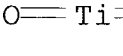


1955

IT **471-34-1, Calcium carbonate,** uses
1344-28-1, Alumina, uses **13463-67-7, Titania,** uses
(**filler;** heat-activatable **microporous membrane** and its uses in **batteries**)
RN 471-34-1 HCA
CN Carbonic acid calcium salt (1:1) (8CI, 9CI) (CA INDEX NAME)



RN 1344-28-1 HCA
CN Aluminum oxide (Al2O3) (8CI, 9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 13463-67-7 HCA
CN Titanium oxide (TiO2) (8CI, 9CI) (CA INDEX NAME)

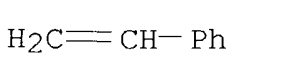


IT **25034-86-0,** Methyl methacrylate-styrene copolymer
(heat-activatable **microporous membrane** and its uses in **batteries**)
RN 25034-86-0 HCA
CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with

ethenylbenzene (9CI) (CA INDEX NAME)

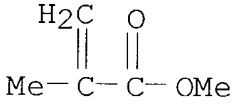
CM 1

CRN 100-42-5
CMF C8 H8



CM 2

CRN 80-62-6
CMF C5 H8 O2



IC ICM B10D039-00
ICS B10D039-14; B10D024-00
NCL 210500220; 210500100; 210500210; 210500260; 210500270; 210500340; 210500350; 210500400; 210500410; 429247000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, 72, 76
ST **battery microporous membrane;** capacitor **microporous membrane;** sensor **microporous membrane;** fuel cell **microporous membrane;** electrochromic device **microporous membrane**
IT Hydrocarbons, uses
(alicyclic, polymers, hydrogenated, **tackifiers;** heat-activatable **microporous membrane** and its uses in **batteries**)
IT Acrylic polymers, uses
(copolymer with polyethyleneadhesive; heat-activatable **microporous membrane** and its uses in **batteries**)
IT **Plastics,** uses
(**engineering;** heat-activatable **microporous membrane** and its uses in **batteries**)
IT **Ceramics**
Molecular sieves
(**filler;** heat-activatable **microporous membrane** and its uses in **batteries**)
IT Fluoropolymers, uses

Glass, uses
(**filler**; heat-activatable **microporous membrane** and its uses in **batteries**)

IT Electrochromic devices
Fuel cells
Porosity
Sensors
Tackifiers
(heat-activatable **microporous membrane** and its uses in **batteries**)

IT **Polycarbonates**, uses
Polysulfones, uses
(heat-activatable **microporous membrane** and its uses in **batteries**)

IT **Adhesives**
(**hot-melt**; heat-activatable **microporous membrane** and its uses in **batteries**)

IT Secondary **batteries**
(lithium; heat-activatable **microporous membrane** and its uses in **batteries**)

IT **Membranes**, nonbiological
(**microporous**; heat-activatable **microporous membrane** and its uses in **batteries**)

IT Rosin
(polymd., **tackifiers**; heat-activatable **microporous membrane** and its uses in **batteries**)

IT Hydrocarbons, uses
(polymers, aliph., arom. modified, **tackifiers**; heat-activatable **microporous membrane** and its uses in **batteries**)

IT Terpenes, uses
(polymers, **tackifiers**; heat-activatable **microporous membrane** and its uses in **batteries**)

IT Polyesters, uses
(substrate; heat-activatable **microporous membrane** and its uses in **batteries**)

IT Capacitors
(supercapacitors; heat-activatable **microporous membrane** and its uses in **batteries**)

IT **9011-17-0**, Hexafluoropropene-vinylidene fluoride copolymer
(Solef 20810; heat-activatable **microporous membrane** and its uses in **batteries**)

IT 74-85-1D, Ethylene, copolymer with alkyl acrylate **24937-78-8**, Ethylene-vinyl acetate copolymer
(**adhesive**; heat-activatable **microporous**

1955

membrane and its uses in **batteries**)

IT **7631-86-9, Fumed silica,** uses
(colloidal, **filler;** heat-activatable **microporous membrane** and its uses in **batteries**)

IT **471-34-1, Calcium carbonate,** uses **1344-28-1, Alumina,** uses 1344-95-2, Calcium silicate 9002-84-0, Ptfe **13463-67-7, Titania,** uses
(**filler;** heat-activatable **microporous membrane** and its uses in **batteries**)

IT 7550-35-8, Lithium bromide (LiBr) 9011-14-7, Pmma 25037-45-0, Poly(bisphenol-A carbonate) 223610-55-7, Escorez 5690 484686-78-4, Solef 21216 500217-25-4, RTP 905
(heat-activatable **microporous membrane** and its uses in **batteries**)

IT 78-93-3, Methyl ethyl ketone, uses 109-99-9, Thf, uses **25034-86-0,** Methyl methacrylate-styrene copolymer
(heat-activatable **microporous membrane** and its uses in **batteries**)

IT 7757-82-6, Sulfuric acid disodium salt, uses 24991-55-7, Polyethylene glycol dimethyl ether
(pore former; heat-activatable **microporous membrane** and its uses in **batteries**)

IT 25038-59-9, Mylar, uses
(substrate; heat-activatable **microporous membrane** and its uses in **batteries**)

IT 177529-80-5, Escorez 2596
(**tackifier;** heat-activatable **microporous membrane** and its uses in **batteries**)

L119 ANSWER 6 OF 30 HCA COPYRIGHT 2004 ACS on STN
138:15280 Method of fabrication of lithium ion polymer **battery**. Coowar, Fazlil; Dass, Vijay (Accentus PLC, UK; AEA Technology Battery Systems). PCT Int. Appl. WO 2002099920 A2 20021212, 19 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (English). CODEN: PIXXD2. APPLICATION: WO 2002-GB2380 20020521. PRIORITY: GB 2001-13551 20010605; GB 2002-6666 20020321.

AB A lithium ion polymer cell comprises an anode layer and a cathode layer each comprising resp. lithium ion insertion materials, sepd. by a **porous** polymeric **membrane**, wherein the

anode layer and the cathode layer each incorporates a polymeric binder. The cell is made by coating a thin porous layer of a copolymer material onto the face of the anode layer and onto the face of the cathode layer, before assembling the anode layer, the **porous** polymeric **membrane**, and the cathode layer to form a cell assembly, and enclosing the cell assembly in an enclosure. A small quantity of a liq. such as acetone is introduced into the enclosure, this being a solvating liq. for the copolymer material but not for the polymeric material of the **membrane**, and then holding the temp. at a slightly elevated level such as 30°, so the surfaces of the thin porous copolymer layers become **tacky** and adhere to the **membrane**. The solvating liq. can then be evapd. from the cell assembly, and an electrolyte soln. introduced into the cell assembly to form a cell. This technique enables the cell components to be laminated together without requiring the application of pressure, and enables very thin **membranes** (e.g. 20 μm) to be used, which are of low resistance.

IC ICM H01M010-40
ICS H01M002-16

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

ST lithium ion polymer **battery** fabrication

IT Secondary **batteries**
(lithium; method of fabrication of lithium ion polymer **battery**)

IT Fluoropolymers, uses
(**membrane**; method of fabrication of lithium ion polymer **battery**)

IT 9002-88-4, Polyethylene 9003-07-0, Polypropylene 24937-79-9, Pvdf
(**membrane**; method of fabrication of lithium ion polymer **battery**)

IT 7440-44-0, Carbon, uses
(mesocarbon microbeads; method of fabrication of lithium ion polymer **battery**)

IT 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer
12057-17-9, Lithium manganese oxide limn2o4
(method of fabrication of lithium ion polymer **battery**)

IT 7782-42-5, Graphite, uses
(method of fabrication of lithium ion polymer **battery**)

IT 111-87-5, 1-Octanol, uses
(method of fabrication of lithium ion polymer **battery**)

IT 67-64-1, Acetone, uses
(solvating liq.; method of fabrication of lithium ion polymer **battery**)

IT 68-12-2, Dmf, uses
(solvent; method of fabrication of lithium ion polymer

battery)

L119 ANSWER 7 OF 30 HCA COPYRIGHT 2004 ACS on STN
136:170226 Fuel cell with reinforced composite ionic conductive polymer membrane. Kim, Hae-Kyoung (S. Korea). U.S. Pat. Appl. Publ. US 2002015875 A1 20020207, 12 pp. (English). CODEN: USXXCO. APPLICATION: US 2001-931862 20010820. PRIORITY: KR 2000-15580 20000327.

AB A reinforced composite ionic conductive polymer membrane, and a fuel cell with improved efficiency that includes the reinforced composite ionic conductive polymer membrane are provided. The reinforced composite ionic conductive polymer **membrane** includes a **porous** support, an ion-exchange polymer that impregnates the porous support; and a reinforcing agent that impregnates the porous support, the reinforcing agent including a moisture retentive material and/or a catalyst for facilitating oxidn. of hydrogen.

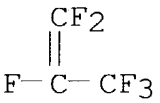
IT **9011-17-0**, Hexafluoropropylene-vinylidene fluoride copolymer (fuel cell with reinforced composite ionic conductive polymer membrane)

RN 9011-17-0 HCA

CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)

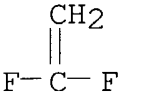
CM 1

CRN 116-15-4
CMF C3 F6



CM 2

CRN 75-38-7
CMF C2 H2 F2



IC ICM H01M008-10
ICS H01G002-00

NCL 429033000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 38

IT Oxidation catalysts
(**electrochem.**; fuel **cell** with reinforced composite ionic conductive polymer membrane)

IT **Polysulfones**, uses
(fuel cell with reinforced composite ionic conductive polymer membrane)

IT 7439-88-5, Iridium, uses 7440-05-3, Palladium, uses 7440-06-4, Platinum, uses 7440-16-6, Rhodium, uses 7440-18-8, Ruthenium, uses 7440-57-5, Gold, uses 9002-88-4, Polyethylene 9003-07-0, Polypropylene **9011-17-0**, Hexafluoropropylene-vinylidene fluoride copolymer 12779-05-4
(fuel cell with reinforced composite ionic conductive polymer membrane)

L119 ANSWER 8 OF 30 HCA COPYRIGHT 2004 ACS on STN

135:252358 The future of the molecular biosciences: Consequences of the massive parallel approach. Michel, Hartmut (Max-Planck-Institute for Biophysics, Frankfurt am Main, D-60528, Germany). Frontiers Science Series, 31(New Frontiers of Science and Technology), 3-12 (English) **2000**. CODEN: FCFUEO. ISSN: 0915-8502. Publisher: Universal Academy Press, Inc..

AB A review and discussion with 0 refs. The Internet has become an invaluable tool for all scientists. It allows immediate communication, rapid access to the scientific literature and to many databases. In the mol. biosciences databases contain the nucleotide sequences of genes and DNA, and gene expression patterns. For making optimal use of such databases, new bioinformatics tools are required. The contents of such databases is generated by the use of many automated machines and robots, which work in parallel. These produce, for example, sequence data, gene expression data and protein-protein interaction data. The significance of the availability of the sequence of the human genome, however, is overestimated. The massive parallel approach to science is much more efficient than the classical one, where one scientist **tackles** one problem manually. The change results also in a new quality of research. It is comparable to the industrial revolution, when machine work in factories replaced handicraft. Room for the ingenuity of scientists remains in developing the machines and evaluation tools, and, most importantly, in the elucidation of the mechanisms of action of individual enzymically active proteins. These are mol. machines. To understand their mode of action, a whole **battery** of techniques from physics and chem., i.e. electron microscopy, x-ray crystallog., quantum chem., mol. dynamics simulations and various spectroscopic methods is needed. Studies on **membrane** proteins represent a special challenge.

CC 3-0 (Biochemical Genetics)

Section cross-reference(s): 6, 9

L119 ANSWER 9 OF 30 HCA COPYRIGHT 2004 ACS on STN
135:168836 **Tacky** polymeric **membrane** carrying electrolytic solution and secondary lithium **battery** using it. Omichi, Takahiro (Teijin Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2001222988 A2 **20010817**, 8 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2000-30283 20000208.

AB The polymeric **membrane** comprises a swellable thermoplastic polymer thin film with m.p. ≥130° covered with a swellable thin film showing **tackiness** ≥10 kN/m2 at swollen conditions and are swollen with nonaq. electrolytic solns. The secondary **battery** comprises the above polymeric **membrane** swollen with nonaq. electrolytic solns. and sandwiched between a Li+-absorbing and releasing cathode and a carbonaceous anode, where each **membrane** is tightly attached. The **membrane** shows high elec. mech. strength and elec. cond. to be useful in **batteries** working both as electrolytes and separator **membranes.**

IC ICM H01M002-16
ICS H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

ST polymeric **membrane** swelling electrolyte lithium **battery**; separator lithium **battery** thermoplastic **membrane tackiness**

IT Nonwoven fabrics
(aramid fiber, reinforcer; **tacky** polymeric **membrane** carrying electrolytic soln. for secondary lithium **battery**)

IT Polyamide fibers, uses
(aramid, m-, nonwoven fabric, reinforcer; **tacky** polymeric **membrane** carrying electrolytic soln. for secondary lithium **battery**)

IT Carbon black, uses
(cathode; **tacky** polymeric **membrane** carrying electrolytic soln. for secondary lithium **battery**)

IT Fluoropolymers, uses
(electrode contg.; **tacky** polymeric **membrane** carrying electrolytic soln. for secondary lithium **battery**)

IT Secondary **batteries**
(lithium; **tacky** polymeric **membrane** carrying electrolytic soln. for secondary lithium **battery**)

IT Secondary **battery** separators
(**tacky** polymeric **membrane** carrying electrolytic soln. for secondary lithium **battery**)

IT Fluoropolymers, uses

(**tacky** polymeric **membrane** carrying electrolytic soln. for secondary lithium **battery**)

IT 12190-79-3, Cobalt lithium oxide (CoLiO2)
(cathode; **tacky** polymeric **membrane** carrying electrolytic soln. for secondary lithium **battery**)

IT 24937-79-9, Poly(vinylidene fluoride)
(electrode contg.; **tacky** polymeric **membrane** carrying electrolytic soln. for secondary lithium **battery**)

IT 14283-07-9, Lithium tetrafluoroborate
(electrolyte; **tacky** polymeric **membrane** carrying electrolytic soln. for secondary lithium **battery**)

IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate
(electrolytic soln. component; **tacky** polymeric **membrane** carrying electrolytic soln. for secondary lithium **battery**)

IT 7440-44-0, Carbon, uses
(mesophase, anode; **tacky** polymeric **membrane** carrying electrolytic soln. for secondary lithium **battery**)

IT 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 35064-83-6, Perfluoromethyl vinyl ether-vinylidene fluoride copolymer
(**tacky** polymeric **membrane** carrying electrolytic soln. for secondary lithium **battery**)

L119 ANSWER 10 OF 30 HCA COPYRIGHT 2004 ACS on STN

135:94372 Methods for preparation of high crystalline polypropylene **microporous membrane** and multi-component **microporous membrane**. Lee, Sang-Young; Ahn, Byeong-In; Im, Sung-Gap; Park, Soon-Yong; Song, Heon-Sik; Kyung, You-Jin (LG Chemical Ltd., S. Korea). PCT Int. Appl. WO 2001051171 A1 **20010719**, 37 pp. DESIGNATED STATES: W: CN, JP, US; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR. (English). CODEN: PIXXD2. APPLICATION: WO 2001-KR37 20010110. PRIORITY: KR 2000-892 20000110; KR 2000-20101 20000417.

AB The present invention relates to a high cryst. polypropylene **microporous membrane** and a prepn. method of the same, and it provides a prepn. method of a polypropylene **microporous membrane** comprising the steps of prepg. a precursor film using high cryst. polypropylene having a crystallinity of 50% or more and a very high isotacticity, annealing, stretching at a low temp., stretching at a high temp., and heat setting, and a polypropylene **microporous membrane** having superior **permeability** and mech. properties prepd. by the prepn. method.

IT **9011-17-0**, Hexafluoropropylene-vinylidene fluoride copolymer Tacky for

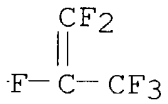
(methods for prepn. of high cryst. polypropylene **microporous membrane** and multi-component **microporous membrane**)

RN 9011-17-0 HCA

CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)

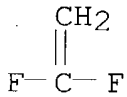
CM 1

CRN 116-15-4
CMF C3 F6



CM 2

CRN 75-38-7
CMF C2 H2 F2



IT **24937-78-8,** Ethylene-vinyl acetate copolymer
(methods for prepn. of high cryst. polypropylene **microporous membrane** and multi-component **microporous membrane**)

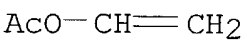
adhesn

RN 24937-78-8 HCA

CN Acetic acid ethenyl ester, polymer with ethene (9CI) (CA INDEX NAME)

CM 1

CRN 108-05-4
CMF C4 H6 O2



CM 2

CRN 74-85-1

CMF C2 H4

$H_2C{=}CH_2$

IC B01D039-16
CC 47-2 (Apparatus and Plant Equipment)
Section cross-reference(s): 38, 52
ST polypropylene **microporous membrane**
IT Polyolefins
(acrylic, graft; methods for prepn. of high cryst. polypropylene **microporous membrane** and multi-component **microporous membrane**)
IT Secondary **batteries**
(lithium; methods for prepn. of high cryst. polypropylene **microporous membrane** and multi-component **microporous membrane**)
IT Polyolefins
(maleated; methods for prepn. of high cryst. polypropylene **microporous membrane** and multi-component **microporous membrane**)
IT **Battery** electrolytes
Crystallinity
Permeability
Polymer electrolytes
Porosity
(methods for prepn. of high cryst. polypropylene **microporous membrane** and multi-component **microporous membrane**)
IT Metallocenes
(methods for prepn. of high cryst. polypropylene **microporous membrane** and multi-component **microporous membrane**)
IT Fluoropolymers, uses
(methods for prepn. of high cryst. polypropylene **microporous membrane** and multi-component **microporous membrane**)
IT Polyoxyalkylenes, uses
(methods for prepn. of high cryst. polypropylene **microporous membrane** and multi-component **microporous membrane**)
IT Polyurethanes, uses
(methods for prepn. of high cryst. polypropylene **microporous membrane** and multi-component **microporous membrane**)
IT Ionomers
(methods for prepn. of high cryst. polypropylene **microporous membrane** and multi-component

microporous membrane)

IT **Membranes**, nonbiological
(**microporous**; methods for prepn. of high cryst. polypropylene **microporous membrane** and multi-component **microporous membrane**)

IT Acrylic polymers, uses
(polyolefin-, graft; methods for prepn. of high cryst. polypropylene **microporous membrane** and multi-component **microporous membrane**)

IT Polyolefins
(silane group grafted; methods for prepn. of high cryst. polypropylene **microporous membrane** and multi-component **microporous membrane**)

IT 9003-05-8, Polyacrylamide 9003-20-7, Polyvinyl acetate 9003-21-8, Polymethylacrylate 9003-39-8, Polyvinyl pyrrolidone 9010-75-7, Chlorotrifluoroethylene-vinylidene fluoride copolymer **9011-17-0**, Hexafluoropropylene-vinylidene fluoride copolymer 24937-79-9, Pvdf 25014-41-9, Polyacrylonitrile 25322-68-3, Peo 25322-69-4, Polypropylene oxide 57619-91-7, Polytetraethylene glycol diacrylate
(methods for prepn. of high cryst. polypropylene **microporous membrane** and multi-component **microporous membrane**)

IT 9019-29-8 **24937-78-8**, Ethylene-vinyl acetate copolymer 25068-12-6, Ethylene-styrene copolymer 25213-02-9, Ethylene-hexene copolymer 39410-01-0, Butylene-styrene copolymer 57271-36-0 70800-37-2, Ethylene-octene copolymer
(methods for prepn. of high cryst. polypropylene **microporous membrane** and multi-component **microporous membrane**)

IT 9002-88-4P, Polyethylene
(methods for prepn. of high cryst. polypropylene **microporous membrane** and multi-component **microporous membrane**)

IT 9003-07-0, Polypropylene
(methods for prepn. of high cryst. polypropylene **microporous membrane** and multi-component **microporous membrane**)

L119 ANSWER 11 OF 30 HCA COPYRIGHT 2004 ACS on STN
134:19370 **Membrane**-electrode unit with integrated sealing edge. Mai, Frank; Bronold, Matthias (Heliocentris Energiesysteme G.m.b.H., Germany). Ger. Offen. DE 19926027 A1 **20001130**, 6 pp. (German). CODEN: GWXXBX. APPLICATION: DE 1999-19926027 19990528.

AB The title unit for an **electrochem. cell** (e.g. fuel cell) comprises a polymer electrolyte **membrane** reciprocally coated with electrodes and has the sealing edge formed

at the outer circumference of a **thermoplastic** adhesive, whose hydrocarbon grid in regular intervals carries ionic or strongly polar groups, which interact with the surface ionic groups of the **membrane** materials. A part of the sealing edge exceeding over the outer edge of the diaphragm electrode unit forms a single unit homogeneous boundary region, which is provided with break-throughs for the assembly and medium guidance and which contribute further improved sealing effect of the diaphragm electrode unit as well as to their improved stability.

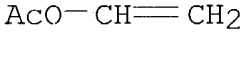
IT **24937-78-8**, Ethylene-vinyl acetate copolymer
(**membrane**-electrode unit with integrated sealing edge)

RN 24937-78-8 HCA

CN Acetic acid ethenyl ester, polymer with ethene (9CI) (CA INDEX NAME)

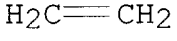
CM 1

CRN 108-05-4
CMF C4 H6 O2



CM 2

CRN 74-85-1
CMF C2 H4



IC ICM H01M008-02
ICS H01M008-22; C25B013-00

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 37, 72

ST fuel cell **membrane** electrode unit; **electrochem cell membrane** electrode unit

IT Fuel cell electrodes
Fuel **cell electrolytes**
Fuel cells
Seals (parts)
(**membrane**-electrode unit with integrated sealing edge)

IT **Plastics**, uses
(**thermoplastics**; **membrane**-electrode unit with integrated sealing edge)

IT **24937-78-8**, Ethylene-vinyl acetate copolymer 25053-53-6, Ethylene-methacrylic acid copolymer

(**membrane**-electrode unit with integrated sealing edge)

L119 ANSWER 12 OF 30 HCA COPYRIGHT 2004 ACS on STN
132:66702 Nonaqueous electrolyte **batteries**. Hashizume, Shozo; Yagasaki, Eriko; Toriyama, Junichi; Yasuda, Hideo (Japan Storage Battery Co., Ltd., Japan; Kansai Electric Power Co.). Jpn. Kokai Tokkyo Koho JP 2000012097 A2 **20000114**, 7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1998-193722 19980623.

AB The **batteries** have a **porous** polymer electrolyte **membrane**, swellable or wettable by a nonaq. electrolyte soln., and cathodes and/or anode held in tubes or pockets of the **porous** polymer electrolyte **membrane**. Preferably, the polymer electrolyte contains poly(vinylidene fluoride), PVC, polyacrylonitrile, or their copolymers; and the polymer membrane has 20-90% porosity.

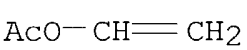
IT **24937-78-8**, Ethylene-vinyl acetate copolymer
(glues for **porous** polymer electrolyte **membrane** tubes or bags for electrodes in secondary lithium **batteries**)

RN 24937-78-8 HCA

CN Acetic acid ethenyl ester, polymer with ethene (9CI) (CA INDEX NAME)

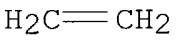
CM 1

CRN 108-05-4
CMF C4 H6 O2



CM 2

CRN 74-85-1
CMF C2 H4



IC ICM H01M010-40
ICS H01M010-40; H01M002-18

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **battery** electrode porous polymer electrolyte cover

IT **Battery** electrodes
(electrodes covered with **porous** polymer electrolyte **membrane** tubes or bags for secondary lithium **batteries**)

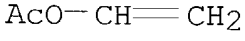
IT Fluoropolymers, uses
(electrodes covered with **porous** polymer electrolyte **membrane** tubes or bags for secondary lithium **batteries**)
IT **Battery** electrolytes
(electrolyte-swellable or -wettable porous polymer electrolyte for covering electrodes in secondary lithium **batteries**)
IT Secondary **batteries**
(lithium; secondary lithium **batteries** contg. electrodes covered with **porous** polymer electrolyte **membrane** tubes or bags)
IT 7782-42-5, Graphite, uses 9002-86-2, PVC 12190-79-3, Cobalt lithium oxide (CoLiO2) 24937-79-9, Poly(vinylidene fluoride) 25014-41-9, Polyacrylonitrile
(electrodes covered with **porous** polymer electrolyte **membrane** tubes or bags for secondary lithium **batteries**)
IT **24937-78-8**, Ethylene-vinyl acetate copolymer
(glues for **porous** polymer electrolyte **membrane** tubes or bags for electrodes in secondary lithium **batteries**)

L119 ANSWER 13 OF 30 HCA COPYRIGHT 2004 ACS on STN
130:197676 Gas-barrier laminates with long-lasting gas-permeation and flex-cracking resistances for diaphragms and bladders in accumulators. Takamatsu, Seisuke (Tokai Rubber Industries, Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 11034246 A2 **19990209** Heisei, 7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1997-190112 19970715.
AB The laminates are used in the gas-liq. interface and contain composite layers comprising (A) sapond. ethylene-vinyl acetate copolymer-contg. gas-barrier layer and (B) polyolefin water-shielding layer, which is placed closer to the liq. side than the gas-barrier layer. The composite layers are sandwiched between (C) elastic layers contg. polyamides. Thus, (A) gas-barrier layers from F 101 (sapond. ethylene-vinyl acetate copolymer), (B) a water-shielding layer from Admer (HDPE), and (C) elastic layers from Super Tuf ST 811HS (polyamide) were coextruded to give a 6-layer laminate [laminate structure (C)/(A)/(C)/(A)/(B)/(C)], which was bonded with (D) rubber layers from JSR 1066 (chlorinated butyl rubber) through an adhesive to obtain a 8-layer laminate [thickness ratio (D)/(C)/(A)/(C)/(A)/(B)/(C)/(D) = 1000/50/25/20/25/30/50/1000 (μm)] with good gas-barrier property.
IT **24937-78-8D**, Ethylene-vinyl acetate copolymer, sapond.
(gas-shielding layer; gas-barrier laminates with long-lasting gas-permeation and flex-cracking resistances for diaphragms and bladders in accumulators)
RN 24937-78-8 HCA

CN Acetic acid ethenyl ester, polymer with ethene (9CI) (CA INDEX NAME)

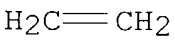
CM 1

CRN 108-05-4
CMF C4 H6 O2



CM 2

CRN 74-85-1
CMF C2 H4



IC ICM B32B027-28
ICS B32B027-32; B32B027-34
CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 52
IT **Membranes**, nonbiological
Secondary **batteries**
Separators
(gas-barrier laminates with long-lasting gas-permeation and flex-cracking resistances for diaphragms and bladders in accumulators)
IT Laminated **plastics**, uses
(gas-barrier laminates with long-lasting gas-permeation and flex-cracking resistances for diaphragms and bladders in accumulators)
IT **24937-78-8D**, Ethylene-vinyl acetate copolymer, sapond. 25067-34-9, F 101
(gas-shielding layer; gas-barrier laminates with long-lasting gas-permeation and flex-cracking resistances for diaphragms and bladders in accumulators)

L119 ANSWER 14 OF 30 HCA COPYRIGHT 2004 ACS on STN
130:40955 Thermoplastic bipolar plate for fuel-cell stack. Davis, James Lynn (Motorola, Inc., USA). Ger. Offen. DE 19823880 A1 **19981210**, 8 pp. (German). CODEN: GWXXBX. APPLICATION: DE 1998-19823880 19980528. PRIORITY: US 1997-868330 19970603.
AB The stack includes 2 electrode (anode-electrolyte-cathode) arrangements and an elec. conductive thermoplastic polymer substrate whose 2 opposite main surfaces contain a plurality of channels. A

main surface of the bipolar plate is adjacent and **adhesively** bonded to an anode main surface of the 1st electrode arrangement, and the other surface is adjacent and **adhesively** bonded to a cathode main surface of the other electrode arrangement. An addnl. layer of a thermoplastic material lies between the plate and the cathode main surface and is melt bonded with the bipolar plate and the cathode. The fuel-**cell electrolyte** is a polymer electrolyte **membrane**. A fuel-cell stack with n electrode arrangements has (n - 1) bipolar plates. The thermoplastic polymer substrate contains metal or C **filler** .

IT **9002-88-4**, Polyethylene **9003-07-0**, Polypropylene
(thermoplastic bipolar plate for fuel-cell stack from carbon- or metal-contg.)
RN 9002-88-4 HCA
CN Ethene, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 74-85-1
CMF C2 H4

$H_2C{=}CH_2$

RN 9003-07-0 HCA
CN 1-Propene, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 115-07-1
CMF C3 H6

$H_3C{-}CH{=}CH_2$

IC ICM H01M008-02
ICS H01M008-22
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
IT Metals, uses
(**filler** in thermoplastic bipolar plate for fuel-cell stack)
IT **Polyimides**, uses
Polyimides, uses
(polyether-; thermoplastic bipolar plate for fuel-cell stack from carbon- or metal-contg.)
IT Polyethers, uses

Polyethers, uses
(**polyimide**-; thermoplastic bipolar plate for fuel-cell stack from carbon- or metal-contg.)

IT Acrylic polymers, uses
Polyamides, uses
Polycarbonates, uses
Polyimides, uses
(thermoplastic bipolar plate for fuel-cell stack from carbon- or metal-contg.)

IT 7440-44-0, Carbon, uses
(**filler** in thermoplastic bipolar plate for fuel-cell stack)

IT **9002-88-4**, Polyethylene **9003-07-0**, Polypropylene
9003-56-9, Acrylonitrile-butadiene-styrene copolymer
(thermoplastic bipolar plate for fuel-cell stack from carbon- or metal-contg.)

L119 ANSWER 15 OF 30 HCA COPYRIGHT 2004 ACS on STN
129:284446 Electrolytic solution-impregnated **porous membrane** conductor and its manufacture. Kono, Kimikazu; Takida, Kotaro; Kaimai, Norimitsu (Tonen Chemical Corp., Japan). Jpn. Kokai Tokkyo Koho JP 10269845 A2 **19981009** Heisei, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1997-91468 19970326.

AB The conductor comprises a nonprotonic electrolytic soln. fixed in a polyolefin-based **microporous membrane** contg. (A) a graft copolymer which is sol. in a nonprotonic electrolytic soln. and (B) an electron-conductive material. The conductor is manufd. by graft polymg. a polymer, which is sol. in a nonprotonic electrolytic soln., on a electron-conductive material-contg. polyolefin **microporous membrane**, followed by impregnating the **membrane** with a nonprotonic electrolytic soln. The **membrane** works in a wide temp. range and shows long service life because of low vaporization speed of the impregnated electrolytic soln. to be useful as **batteries** and electrodes.

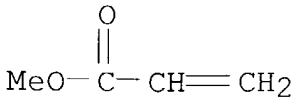
IT **135506-24-0P**, Ethylene-methyl acrylate graft copolymer
(manuf. of electrolytic soln.-impregnated **porous membrane** conductor)

RN 135506-24-0 HCA

CN 2-Propenoic acid, methyl ester, polymer with ethene, graft (9CI) (CA INDEX NAME)

CM 1

CRN 96-33-3
CMF C4 H6 O2



CM 2

CRN 74-85-1
CMF C2 H4

IC ICM H01B001-12
ICS H05K009-00
CC 76-2 (Electric Phenomena)
ST electrolytic soln impregnation **porous membrane** conductor; graft polymer soly nonprotonic electrolyte **membrane**; electron conductor **porous membrane** impregnation electrolyte; polyolefin **porous membrane** impregnation electrolytic soln
IT Carbon black, uses
Petroleum coke
(electron conductor; manuf. of electrolytic soln.-impregnated **porous membrane** conductor)
IT Polymers, processes
(graft; manuf. of electrolytic soln.-impregnated **porous membrane** conductor)
IT Electric conductors
Membranes, nonbiological
(manuf. of electrolytic soln.-impregnated **porous membrane** conductor)
IT Polyolefins
(manuf. of electrolytic soln.-impregnated **porous membrane** conductor)
IT Electrolytic solutions
(nonprotonic; manuf. of electrolytic soln.-impregnated **porous membrane** conductor)
IT 21324-40-3, Lithium hexafluorophosphate
(electrolyte; manuf. of electrolytic soln.-impregnated **porous membrane** conductor)
IT **135506-24-0P**, Ethylene-methyl acrylate graft copolymer
(manuf. of electrolytic soln.-impregnated **porous membrane** conductor)

L119 ANSWER 16 OF 30 HCA COPYRIGHT 2004 ACS on STN
129:208461 The electrochemical impedance of a free-standing polypyrrole

membrane. Ehrenbeck, C.; Juttner, K.; Ludwig, S.; Paasch, G. (Karl-Winnacker-Inst., DECHEMA e.V., Frankfurt/Main, 60486, Germany). Electrochimica Acta, 43(19-20), 2781-2789 (English) **1998**. CODEN: ELCAAV. ISSN: 0013-4686. Publisher: Elsevier Science Ltd..

AB Electrochem. impedance measurements of polypyrrole in 0.1M KCl were carried out on film electrodes in asym. configuration (metal-film-soln.) and on free standing membranes in sym. configuration (soln.-film-soln.) in a two-compartment **electrochem. cell** with two Pt counter electrodes and two Ag/AgCl (sat. KCl) ref. electrodes. Films of 7.5-20 μm thickness were deposited on a micro-porous gold sputtered polycarbonate foil as support by electropolymn. from aq. soln. of 0.07-0.1 M pyrrole monomer and 0.1M KCl. The impedance of the membrane was measured as function of the film thickness and the redox potential. The data were analyzed with a theory of a macroscopically **homogeneous porous membrane**, previously developed for a porous layer coating on a metal electrode and here extended for heterogeneous charge transfer between better conducting (stronger oxidized) regions and less conducting regions within the film.

CC 72-2 (Electrochemistry)
Section cross-reference(s): 35, 36, 76

L119 ANSWER 17 OF 30 HCA COPYRIGHT 2004 ACS on STN

128:194644 Primary solid state **batteries**. Dalas, E.; Tsamouras, D.; Bouropoulos, N. (Department of Chemistry, University of Patra, Patra, GR - 26 500, Greece). Ionics, 1(3), 235-241 (English) **1995**. CODEN: IONIFA. ISSN: 0947-7047. Publisher: Institute for Ionics.

AB Low-cost, easily fabricated **dry cells** were constructed by **gluing** a composite conducting material or a metal sulfide on magnesium or aluminum foils, using a solid electrolyte made from polyvinylpyrrolidone. Composite conducting materials consisted of polypyrrole and polyaniline incorporated into an inorg. or polymer matrix or cupric oxide incorporated into a styrene-butadiene copolymer matrix. The efficiency, energy densities and voltage values of the cells were in the range 0.5-18.3 mWh cm-3, 9-339 wh kg-1 and 0.5-2.0 V, resp. The energy densities of the cells were up to seventeen times more than the energy d. of the PbO2-H2SO4-Pb multiple charge/discharge system and up to ten times more than the energy d. of the nickel/cadmium rechargeable cell. A **dry cell** composed solely from polymers was constructed with cell voltage 0.25-0.50 V and efficiency ranging from 0.07 to 0.13 mWh cm-3 ten times lower than other com. cells.

IT **1344-28-1, Alumina**, uses
(Y-, **membranes**; fabrication of **dry cell** composed solely from polymers)

RN 1344-28-1 HCA
CN Aluminum oxide (Al2O3) (8CI, 9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
IT **9003-53-6D, Polystyrene,** sulfonated
9003-70-7D, sulfonated
(fabrication of **dry cell** composed solely from polymers)
RN 9003-53-6 HCA
CN Benzene, ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

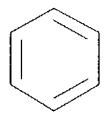
CRN 100-42-5
CMF C8 H8

$H_2C{=}CH{-}Ph$

RN 9003-70-7 HCA
CN Benzene, diethenyl-, polymer with ethenylbenzene (9CI) (CA INDEX NAME)

CM 1

CRN 1321-74-0
CMF C10 H10
CCI IDS



$2\left[\ D1{-}CH{=}CH_2\ \right]$

CM 2

CRN 100-42-5
CMF C8 H8

$H_2C{=}CH{-}Ph$

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST polymer **dry cell battery**
IT Conducting polymers
Dry cell primary batteries
Electric conductivity
Primary **batteries**
Thermoelectricity
(fabrication of **dry cell** composed solely from polymers)
IT **1344-28-1, Alumina**, uses
(Y-, **membranes**; fabrication of **dry cell** composed solely from polymers)
IT 9003-39-8, Polyvinylpyrrolidone
(electrolyte; fabrication of **dry cell** composed solely from polymers)
IT 1317-40-4, Copper sulfide cus 7429-90-5, Aluminum, uses 7439-95-4, Magnesium, uses **9003-53-6D, Polystyrene**, sulfonated **9003-70-7D**, sulfonated 12030-24-9, Indium sulfide in2s3 25233-30-1, Polyaniline 30604-81-0, Polypyrrole 57455-50-2, Copper zinc sulfide cuzns2 147830-25-9, Cadmium copper sulfide cdcus2
(fabrication of **dry cell** composed solely from polymers)
IT 9002-89-5, Polyvinyl alcohol 63482-29-1, Millipore
(**membranes**; fabrication of **dry cell** composed solely from polymers)

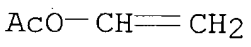
L119 ANSWER 18 OF 30 HCA COPYRIGHT 2004 ACS on STN
128:37243 Nickel hydrogen laminated **batteries**. Nagai, Tatsu; Fukunaga, Hiroshi; Takai, Masahiko (Hitachi Maxell, Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 09298067 A2 **19971118** Heisei, 8 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1997-67394 19970304. PRIORITY: JP 1996-81042 19960308.
AB The **batteries** are assembled from cells having a Ni hydroxide based pos. electrode, a H-absorbing alloy neg. electrode, a nonwoven cloth separator, and an alk. electrolyte and connected parallelly or in series, each cell is sealed with a **hot-melt** or thermally shrinkable **adhesive**, the assembly is sealed with a **membrane** allowing selective passage of gases and liq., and the assembly is sealed in a square metal case with a reversible vent. The selective **membrane** has a **permeability** 0.2-7 mL/cm2-s and a water resistance 0.02-2 kg/cm2. The **batteries** have high capacity, and the prodn. cost is low.
IC ICM H01M010-28
ICS H01M002-04; H01M002-08
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST nickel hydrogen laminated **battery**

IT Fluoropolymers, uses
(laminated nickel-hydrogen **batteries**)
IT Polyolefins
(maleic anhydride modified; laminated nickel-hydrogen **batteries**)
IT Secondary **batteries**
(nickel-hydrogen; laminated nickel-hydrogen **batteries**)
IT 24937-79-9, Polyvinylidene fluoride
(laminated nickel-hydrogen **batteries**)
IT 199792-78-4
(neg. electrode; laminated nickel-hydrogen **batteries**)
IT 9003-07-0, Polypropylene
(nonwoven cloth separator; laminated nickel-hydrogen **batteries**)

L119 ANSWER 19 OF 30 HCA COPYRIGHT 2004 ACS on STN
124:207178 Air **batteries** with improved air diffusion sheets.
Yokoyama, Takashi; Murakami, Kaoru; Morita, Korenobu; Ooo, Fumio (Matsushita Electric Ind Co Ltd, Japan). Jpn. Kokai Tokkyo Koho JP 08007935 A2 **19960112** Heisei, 4 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1994-138682 19940621.
AB The **batteries** use **porous** polytetrafluoroethene **membranes** as air diffusion sheets between their cathode case and cathodes, where the membrane is laminated with a polyolefin screen to form a corrugated surface facing the cathode case. A hot melt resin, having viscosity ≤10,000 cP when melted, may be used in place of the screen for forming the corrugation.
IT **24937-78-8**, Ethylene-vinyl acetate copolymer
(surface corrugation of polytetrafluoroethene air diffusion sheets by hot melt resins for air **batteries**)
RN 24937-78-8 HCA
CN Acetic acid ethenyl ester, polymer with ethene (9CI) (CA INDEX NAME)

CM 1

CRN 108-05-4
CMF C4 H6 O2



CM 2

CRN 74-85-1
CMF C2 H4

$H_2C{=}{=}CH_2$

IC ICM H01M012-06
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **battery** air diffusion polytetrafluoroethene polyolefin membrane
IT Cathodes
(**battery**, polytetrafluoroethene air diffusion sheets with corrugated surface for air **battery** cathodes)
IT 9003-07-0, Polypropylene
(polytetrafluoroethene air diffusion sheets laminated with polypropylene screen sheets for corrugated surface for air **batteries**)
IT 9002-84-0, Polytetrafluoroethene
(polytetrafluoroethene air diffusion sheets with corrugated surface for air **batteries**)
IT **24937-78-8**, Ethylene-vinyl acetate copolymer
(surface corrugation of polytetrafluoroethene air diffusion sheets by hot melt resins for air **batteries**)

L119 ANSWER 20 OF 30 HCA COPYRIGHT 2004 ACS on STN
120:303338 Air **batteries** and selective permeation membranes for the **batteries**. Shimatani, Shunichi; Ezoe, Minoru; Yakura, Kazuyuki (Nitto Denko Corp, Japan). Jpn. Kokai Tokkyo Koho JP 06044954 A2 **19940218** Heisei, 9 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1993-92208 19930325. PRIORITY: JP 1992-143143 19920507.
AB The **batteries** have a perforated selective permeable membrane between their cathode case and O cathodes. The membrane is a polymer or **homogeneous membrane** having <10% **perforations** having diam. <300 μm, allows the **batteries** to deliver a c.d. ≥10 mA/cm2, and preferably has a water vapor permeation rate <5x10-5 cm3/cm2/s/cmHg. These **batteries** have good heavy-load performance and long shelf life.
IC ICM H01M002-16
ICS H01M002-18
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST air **battery** selective permeation film
IT Cathodes
(**battery**, oxygen, perforated selective permeation membranes for)
IT 9002-84-0, PTFE 25038-59-9, Poly(ethylene terephthalate), miscellaneous
(selective permeation membranes, perforated, for air **batteries**)

L119 ANSWER 21 OF 30 HCA COPYRIGHT 2004 ACS on STN
120:55924 High-molecular weight polymer blends with network structures. Fukahori, Yoshihide; Mashita, Naruhiko; Ogino, Akihiko; Toyosawa, Shinichi; Ohba, Takeshi; Imai, Yasushi (Bridgestone Corp., Japan). Ger. Offen. DE 4243055 A1 **19930701**, 16 pp. (German). CODEN: GWXXBX. APPLICATION: DE 1992-4243055 19921218. PRIORITY: JP 1991-341049 19911224; JP 1992-7423 19920120; JP 1992-7424 19920120.

AB The title blends, with greatly improved properties, contain smaller amts. of high-mol. wt. org. materials and larger amts. of low-mol. wt. org. materials. Mixing 12 vol.% hydrogenated butadiene-styrene block copolymer (mol. wt. 80,000) with 88 vol.% rosin ester (mol. wt. 900) at 200° and 3000 rpm gave a blend with a cellular structure (cell diam. 40 μm) and strain 0, 1000, and 1600% at stress 0, .apprx.3, and .apprx.4.5 kg/cm2, resp.

IC ICM C08J009-26
ICS C08J009-40; C08L053-00; C08L053-02; C09K019-00; D06N007-02

ICA B01D071-00; B01D061-24; B01D061-14; B01D061-02; B01D053-22

ICI C08L053-00, C08L023-08; C08L025-08

CC 37-6 (Plastics Manufacture and Processing)

IT Lubricants
Plasticizers
Tackifiers
(blends with thermoplastics, with network structures)

IT **Batteries**, secondary
(**membranes** for, hydrogenated block SBR blends with network structure as)

L119 ANSWER 22 OF 30 HCA COPYRIGHT 2004 ACS on STN
116:110054 Preparation of **dry cells** using polypyrrole and polyaniline composites. Dalas, E. (Dep. Chem., Univ. Patras, Patras, 26110, Greece). Journal of Materials Science, 27(2), 453-7 (English) **1992**. CODEN: JMTSAS. ISSN: 0022-2461.

AB Composite conducting materials, consisting of polypyrrole and polyaniline incorporated into an inorg. or polymer matrix were prepd. Low-cost, **dry cells** were fabricated by **gluing** the composite conducting **membrane** on Mg or Al foils. The charge-discharge efficiency and emf. of the cells were 0.5-13.8 mW-h/cm3 and 0.5-2.0 V, resp.

IT **1344-28-1, Alumina**, uses
(polypyrrole and polyaniline composites of yttrium-contg., for **dry cells**)

RN 1344-28-1 HCA

CN Aluminum oxide (Al2O3) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT **9003-53-6D, Polystyrene**, sulfonated
9003-70-7D, Divinylbenzene-styrene copolymer, sulfonated
(polypyrrole and polyaniline composites, for **dry**

cells)
RN 9003-53-6 HCA
CN Benzene, ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

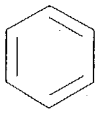
CRN 100-42-5
CMF C8 H8

$H_2C{=}CH{-}Ph$

RN 9003-70-7 HCA
CN Benzene, diethenyl-, polymer with ethenylbenzene (9CI) (CA INDEX NAME)

CM 1

CRN 1321-74-0
CMF C10 H10
CCI IDS



$2\left[\ D1{-}CH{=}CH_2\ \right]$

CM 2

CRN 100-42-5
CMF C8 H8

$H_2C{=}CH{-}Ph$

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST **battery dry cell** polypyrrole polyaniline composite; conducting polymer polypyrrole polyaniline composite
IT Electric conductors, polymeric

(polyaniline and polypyrrole composites of inorg. or polymeric porous carriers, for **dry cells**)

IT Filter paper
Filters and Filtering materials, micro-, **membranes**
(polypyrrole and polyaniline composites, for **dry cells**)

IT Polyamines
(aniline-based, composites, with inorg. or polymeric porous carriers, **dry cell batteries** with)

IT Cathodes
(**battery**, polypyrrole and polyaniline composites, with inorg. or polymeric porous carriers, magnesium **dry cells** with)

IT **Batteries, primary**
(**dry-cell**, with polypyrrole and polyaniline composites of inorg. or polymeric porous carriers, prepn. of)

IT 7440-65-5, Yttrium, uses
(**alumina** contg., polypyrrole and polyaniline composites of, for **dry cells**)

IT 7429-90-5, Aluminum, uses 7439-95-4, Magnesium, uses
(anodes, **dry cells** with polypyrrole and polyaniline composites of inorg. or polymeric porous carrier cathode and, performance of)

IT 25233-30-1, Polyaniline 30604-81-0, Polypyrrole
(composites, with inorg. polymer porous carriers, **dry cell battery** using)

IT 25233-30-1D, Polyaniline, sulfonated 30604-81-0D, Polypyrrole, sulfonated
(elec. cond. of, **dry cell battery** use in relation to)

IT 7447-40-7, Potassium chloride, uses
(electrolytes, poly(vinyl alc.)-polyaniline composite contg. aq., in **dry cell**)

IT **1344-28-1, Alumina**, uses
(polypyrrole and polyaniline composites of yttrium-contg., for **dry cells**)

IT 9002-89-5, Polyvinyl alcohol **9003-53-6D**, **Polystyrene**, sulfonated **9003-70-7D**, Divinylbenzene-styrene copolymer, sulfonated
(polypyrrole and polyaniline composites, for **dry cells**)

L119 ANSWER 23 OF 30 HCA COPYRIGHT 2004 ACS on STN
106:87752 Thin-type lithium **batteries**. Nagai, Tatsu; Matsumoto, Kazunobu; Kajita, Kozo (Hitachi Maxell, Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 61214374 A2 **19860924** Showa, 6 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1985-55183 19850319.

AB The electrolyte in thin Li **batteries**, having edges sealed with a **hot-melt adhesive**, is a viscous liq. contg. a Li salt, a poly(alkyl methacrylate), and solvents. This prevents the loss of electrolyte in hot-sealing and facilitates **battery** manuf. The electrolyte was a mixt. of 1:3 LiBPh4-MeOC2H4OMe adduct 11.2, propylene carbonate 23.8, and PMMA 5.2 parts homogenized by heating, and showed a cond. 1.8 + 10-3 S. A paste of well-kneaded TiS2 powder with the electrolyte in 3:7 vol. ratio was applied on a square stainless steel sheet collector by screen printing to prep. the cathode; the separator was a Duraguard 2400 **membrane** contg. the electrolyte, and the Li sheet was the anode. A **battery** assembled by using a ceramic spacer and a modified polyolefin **hot melt** (180°) **glue** had a thickness 0.45 mm. The **battery** showed a higher active mass utilization value and a longer cycle life than a control **battery** having a sheet cathode of TiS2 powder and Teflon binder and nonviscous electrolyte not contg. PMMA.

IC ICM H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **battery** lithium thin; dimethoxyethane lithium phenylborate **battery** electrolyte

IT **Batteries**, primary
(lithium, thin, with viscous paste electrolyte, manuf. of)

IT Electric conductivity and conduction
(of dimethoxyethane-lithium tetraphenylborate adduct-PMMA-propylene carbonate, for **battery** electrolytes)

IT 9011-14-7, PMMA 75965-35-4
(electrolyte contg., for thin lithium **batteries**)

L119 ANSWER 24 OF 30 HCA COPYRIGHT 2004 ACS on STN

100:211254 Hydrophilic composite **membranes**. (Asahi-Dow Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 59004402 A2 **19840111** Showa, 24 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1982-111477 19820630.

AB A thin and acid-resistant hydrophilic composite **membrane** with high strength, exhibiting low elec. resistance in an electrolyte soln., useful in the sepn. of water from an org. compd. from the mixt. at high water permeation rate or as a **battery** separator comprises (A) an ultrathin, semipermeable film of ethylene copolymer (or a blend contg. an ethylene copolymer) contg. a hydroxy, carboxylic acid, its C1-5 alkyl ester or its salt group in addn. to ≥0.2 mequiv/g sulfonyl group and (B) a porous support film from a sulfonated ethylene polymer. Thus, a porous polyethylene (I) support film (thickness 140 μ, d. 0.950, and melt index 1) contg. 50% SiO2 with porosity 55% and av. pore size 0.02 μ was coated with an 40% aq. dispersion of 93.5:6.5 mol

ratio ethylene-Me methacrylate copolymer which had been 95% sapond. and 35% neutralized (with NaOH). After heating at 90° for 1 h, the film was pressed (on the coated side) with another I film at 110°, stretched at 2.5:1 ratio in both directions, treated with fuming H2SO4 at 35° for 12 min, sapond., and neutralized (with KOH) to give a composite **membrane** comprising layer A (thickness 1 μ) contg. SO3H groups at 4.8 mequiv/g-film sandwiched between layers B contg. SO3H groups at 0.14 mequiv/g-film exhibiting ratio of water to EtOH [64-17-5] permeation rate 3.8 and water permeation rate 7.2 kg/h-m2 when used in the sepn. of 1:1 EtOH-water by pervaporation at 1 torr/40°.

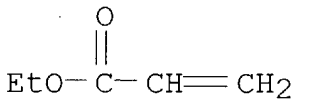
IT **9010-86-0D**, sulfonated **24937-78-8D**, sulfonated
(ultrathin films, composite **membranes** with **porous** sulfonated ethylene polymers, acid-resistant)

RN 9010-86-0 HCA

CN 2-Propenoic acid, ethyl ester, polymer with ethene (9CI) (CA INDEX NAME)

CM 1

CRN 140-88-5
CMF C5 H8 O2



CM 2

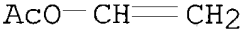
CRN 74-85-1
CMF C2 H4

RN 24937-78-8 HCA

CN Acetic acid ethenyl ester, polymer with ethene (9CI) (CA INDEX NAME)

CM 1

CRN 108-05-4
CMF C4 H6 O2



CM 2

CRN 74-85-1
CMF C2 H4

$H_2C{=}CH_2$

IC B01D013-00
ICA B32B027-28; B32B027-32; C08J005-22
CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 48, 72
ST ethylene copolymer sulfonated permselective **membrane;** methacrylate copolymer sulfonated **membrane;** polyethylene sulfonated support film **membrane;** ethanol sepn water permselective **membrane; battery** separator sulfonated ethylene copolymer
IT Apple juice
Orange juice
(concn. of, from water, by pervaporation, composite **membranes** contg. ultrathin ethylene copolymers for)
IT **Membranes**
(permselective, ultrathin sulfonated ethylene copolymer films with porous sulfonated ethylene polymer support films)
IT Permeability and Permeation
(pervaporation, of org. compds. from aq. mixts., composite **membranes** contg. ultrathin sulfonated ethylene copolymers for)
IT **Batteries,** secondary
(separators, composite **membranes** contg. ultrathin sulfonated ethylene copolymers, with low elec. resistance and acid resistance)
IT 9002-88-4D, sulfonated
(**porous,** composite **membranes** with ultrathin hydrophilic sulfonated ethylene copolymer films)
IT 64-17-5P, preparation 64-19-7P, preparation 67-63-0P, preparation 67-64-1P, preparation 71-23-8P, preparation 71-55-6P 141-78-6P, preparation
(sepn. of, from water, by pervaporation, composite **membranes** contg. ultrathin sulfonated ethylene copolymers for)
IT 9010-77-9D, sulfonated **9010-86-0D,** sulfonated **24937-78-8D,** sulfonated 25053-53-6D, sulfonated 25101-13-7D, hydrolyzed, neutralized, sulfonated
(ultrathin films, composite **membranes** with **porous** sulfonated ethylene polymers, acid-resistant)

L119 ANSWER 25 OF 30 HCA COPYRIGHT 2004 ACS on STN
92:129958 Crosslinked low density linear polyethylenes. Clarke, Raymond; Tamplin, Paul; Heaven, Malcolm Dennis (Raychem Ltd., UK). Brit. UK Pat. Appl. GB 2019412 **19791031**, 18 pp. (English). CODEN: BAXXDU. APPLICATION: GB 1979-11916 19790405.

AB Crosslinked **plastics** useful in manufg. heat-shrinkable sleeves, cell-separator **membranes** for **batteries** and cells, elec. insulators, etc., contain a linear low-d. ethylene homo- or copolymer of d. ≤0.94 g/cm3 at 25° prior to crosslinking and having <30 Me groups/1000 C atoms optionally blended with branched low-d. polyethylene, linear high-d. polyethylene, or ethylene-unsatd. aliph. ester copolymers. Thus, a compn. contg. Sclair 8405 [9002-88-4] 62.55, ground CaCO3 30.00, Vulcan 9 3.00, Zn stearate 1.50, Maglite D 1.50, Irganox 1010 1.25, and triallyl cyanurate [101-37-1] 0.20 parts was extruded in a lab. extruder operating at barrel temp. (zone 1) 120-30°, barrel temp. (zone 2) 130-40°, die temp. 140-50°, and haul-off speed 0.4 m/min to form a 25-mm-diam. tube of wall thickness 1 mm. The tube was irradiated at dosage 10 Mrad in an electron accelerator, cut into 20-cm lengths and expanded by 500% (as measured by wall thickness changes) to form a heat-shrinkable sleeve suitable for application to a 26-120-mm-diam. substrate.

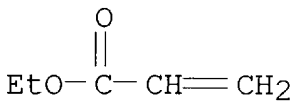
IT **9010-86-0**
(blends, with low-d. crosslinked polyethylene, antitracking elec. insulating sleeves of)

RN 9010-86-0 HCA

CN 2-Propenoic acid, ethyl ester, polymer with ethene (9CI) (CA INDEX NAME)

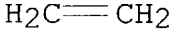
CM 1

CRN 140-88-5
CMF C5 H8 O2



CM 2

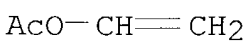
CRN 74-85-1
CMF C2 H4



IT **24937-78-8**
(blends, with low-d. crosslinked polyethylene, heat-shrinkable sleeves of)
RN 24937-78-8 HCA
CN Acetic acid ethenyl ester, polymer with ethene (9CI) (CA INDEX NAME)

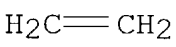
CM 1

CRN 108-05-4
CMF C4 H6 O2



CM 2

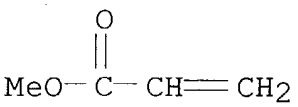
CRN 74-85-1
CMF C2 H4



IT **25103-74-6**
(rubber, blends with low-d. crosslinked polyethylene, oil-resistant)
RN 25103-74-6 HCA
CN 2-Propenoic acid, methyl ester, polymer with ethene (9CI) (CA INDEX NAME)

CM 1

CRN 96-33-3
CMF C4 H6 O2



CM 2

CRN 74-85-1
CMF C2 H4

$H_2C{=}{=}CH_2$

IC C08F010-02; C08J003-24
CC 36-6 (Plastics Manufacture and Processing)
Section cross-reference(s): 76
ST heat shrinkage **plastic** blend; polyethylene low density crosslinking; **membrane** heat shrinkable sleeve; sleeve heat shrinkable polyethylene blend
IT **Batteries, primary**
(**cell**-separator **membranes** for, compns. contg. low-d. crosslinked linear polyethylene for)
IT **Electrolytic cells**
(**cell**-separator **membranes** for, low-d. crosslinked linear polyethylene compns. for)
IT **Plastics,** film
(heat-shrinkable, ethylene-vinyl acetate copolymer blends with low-d. crosslinked linear polyethylene for)
IT **9010-86-0**
(blends, with low-d. crosslinked polyethylene, antitracking elec. insulating sleeves of)
IT **24937-78-8**
(blends, with low-d. crosslinked polyethylene, heat-shrinkable sleeves of)
IT **25103-74-6**
(rubber, blends with low-d. crosslinked polyethylene, oil-resistant)

L119 ANSWER 26 OF 30 HCA COPYRIGHT 2004 ACS on STN
89:76100 **Permeable membranes.** Shinomura, Toshihiko (Nippon Oil Co., Ltd., Japan). Ger. Offen. DE 2751075 **19780615,** 57 pp. (German). CODEN: GWXXBX. APPLICATION: DE 1977-2751075 19771115.
AB In the manuf. of permselective **membranes** for use as reverse osmosis **membranes, battery** separators, and filters by blow extrusion of polymer mixts., the pore size of the **membranes** is controlled by keeping the films in a molten state for a time detd. by the extruder parameters. Thus, 50 parts isotactic polypropylene [25085-53-4] (melt index 2) and 50 parts ethylene-vinyl acetate copolymer [**24937-78-8**] were melt-extruded at 230° through a circular die so the blown tube remained molten for 20 s with take-up velocity 1 m/s. The 0.25 mm-thick film was soaked in C2Cl4 for 30 min at 85° to give a film with tensile strength in the lengthwise and transverse direction 260 and 245 kg/cm2, resp., air permeability time 1251 s/300 mL air, and max. pore diam. 3.5 μ.
IT **24937-78-8P**
(isotactic polypropylene blends, permselective **membranes**

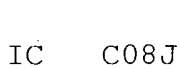
from, **pore** size control in manuf. of)
RN 24937-78-8 HCA
CN Acetic acid ethenyl ester, polymer with ethene (9CI) (CA INDEX NAME)

CM 1

CRN 108-05-4
CMF C4 H6 O2

CM 2

CRN 74-85-1
CMF C2 H4



IC C08J005-22
CC 37-3 (Plastics Fabrication and Uses)
ST **membrane** permselective **pore** size; polypropylene blend permselective **membrane**; ethylene copolymer blend **membrane**; vinyl acetate copolymer **membrane**; blend polymer permselective **membrane**; blow extrusion **membrane** permselective
IT **Plastics**
(blends, permselective **membranes** from, **pore** size control in manuf. of)
IT Rubber, butyl, uses and miscellaneous
(isotactic polypropylene blends, permselective **membranes** from, **pore** size control in manuf. of)
IT Petroleum resins
(polymer blends, permselective **membranes** from, **pore** size control in manuf. of)
IT Pore
(size of, control of, in permselective **membranes**)
IT Extrusion of **plastics** and rubbers
(blow, of polymer blends, pore size control in, for permselective **membrane** manuf.)
IT **Membranes** and Diaphragms
(permselective, pore size control in manuf. of, by blow extrusion of polymer blends)
IT 9002-86-2P 9002-88-4P 9003-20-7P 9003-53-6P 9010-77-9P 25038-59-9P, preparation 25085-53-4P

(blends, permselective **membranes** from, **pore** size control in manuf. of)
IT 9003-27-4P 9003-28-5P 9011-14-7P **24937-78-8P**
(isotactic polypropylene blends, permselective **membranes** from, **pore** size control in manuf. of)

L119 ANSWER 27 OF 30 HCA COPYRIGHT 2004 ACS on STN
84:128074 Cation exchange-type **membrane** for diaphragms in brine **electrolysis cells**. Sata, Toshikatsu; Murakami, Shoji; Murata, Yasuo (Tokuyama Soda Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 50096472 **19750731** Showa, 20 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1973-144512 19731227.
AB Chem. stable diaphragms allowing high current efficiency when used in diaphragm-type brine **electrolysis cells** consistent of a polymer film with uniformly distributed cation-exchanging moieties and F atoms in contact with a thin film contg. anion-exchange moieties. Thus, Nafion XR-480 (sulfonated perfluorocarbon-type cation exchange resin, du Pont) was dried for 4 hr at 80° then chlorinated with SOCl2 by refluxing for 48 hr. After washing with CCl4 the chlorinated resin was soaked for 72 hr at 60° in polyethyleneimine (purity 98%, mol wt. 5000). Part of the **tacky** polyethyleneimine film was removed mech. and the resin was washed in water to remove the excess polyethyleneimine. The resin was then treated for 24 hr at 60° in 4.0-N NaOH to convert the SO2Cl group to the O3SNa group. The S:N ratio in the surface layer (10 μ) was 1:8 revealing that a cationic surface film was present joined through an acid amide linkage. This diaphragm material was used together with a Ru oxide-TiO2-coated non-consumeable anode and a Ni plate cathode to electrolyze brine by feeding the anode chamber with satd. brine (5 cm/sec) and supplying the cathode chamber with water to yield a 4.0-N NaOH soln. With a c.d. of 20 A/dm2 and electrolyte temp. of 70°, the current efficiency for NaOH prodn. was 96% and the NaCl content in the 4 N NaOH was 0.0002 N. In contrast, when a Nafion XR-480 diaphragm was used directly the current efficiency was only 80% and the NaCl content was 0.004 N.
IC C25B; B01D; C08J
CC 72-10 (Electrochemistry)
IT Brines
(electrolysis of, cation-exchanging **membrane** diaphragms for)
IT **Electrolytic cells**
(for brines, cation-exchanging **membrane** diaphragms for)
IT Aziridine, homopolymer, reaction products with Nafion XR-480
Nafion XR 480, reaction products with polyethyleneimine
(cation-exchanging diaphragm for brine **electrolytic cells**)

L119 ANSWER 28 OF 30 HCA COPYRIGHT 2004 ACS on STN
80:1293 Apparatus for measuring the concentration of dissolved oxygen in an aqueous solution. Clifton, John S.; Parker, Dawood; Macleod, Norman; Proctor, David (National Research Development Corp.). Brit. GB 1325873 **19730808**, 5 pp. (English). CODEN: BRXXAA. APPLICATION: GB 1969-40040 19690811.

AB The title app., useful for biol. fluids and polluted water anal., consists of a solid structure incorporating electrodes of Ag and Pb. The solid structure is in contact with one face of a **homogeneous** water-absorbent O-**permeable membrane** of polyethylene or silicone rubber formed in situ, and the other face of the membrane is in contact with the soln. to be examd. The solid structure may incorporate a source [e.g. (NH4)2SO4] of OH-, which will diffuse into the membrane when it absorbs water. The characteristics of the cell formed by the 2 electrodes and the electrolyte held in the membrane are affected by the O diffusing into the membrane.

IC G01N

CC 9-3 (Biochemical Methods)
Section cross-reference(s): 61

IT **Electrolytic cells**
(for oxygen detn. in aq. soln.)

IT 7782-44-7, analysis
(detn. of, in blood and water, **electrolytic cells** for)

L119 ANSWER 29 OF 30 HCA COPYRIGHT 2004 ACS on STN
76:93880 Separators for electric **batteries**. Johnson, Martin H.; Larsen, Duane M.; Saxe, Carroll G. (ESB Inc.). Brit. GB 1259051 **19720105**, 7 pp. (English). CODEN: BRXXAA. APPLICATION: GB 19700413.

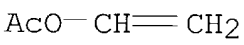
AB A laminated separator for an elec. **battery** comprises a **semipermeable membrane** barrier material laminated to an absorbent sheet material consisting of a vinyl acetate-ethylene copolymer resin binder blended with a gelling agent capable of absorbing and retaining the **battery** electrolyte. The vinyl acetate-ethylene copolymer forms a continuous matrix and comprises 10-30 wt. % of the absorbent sheet material, the balance being the gelling agent. The resin binder and gelling agent, e.g., a mixt. of starch and flour, are blended in such a manner that the gelling agent is not gelled until it makes contact with the **battery** electrolyte. The elec. **battery** has a Zn anode, an aq. electrolyte soln., a cathode appreciably sol. in the electrolyte, and the separator between the anode and cathode. The cathodic depolarizer is an azodicarbonamide compd., e.g., di-Bu azodicarbonamide.

IT **24937-78-8**
(binder, for Leclanche **dry cell** separators)

RN 24937-78-8 HCA
CN Acetic acid ethenyl ester, polymer with ethene (9CI) (CA INDEX NAME)

CM 1

CRN 108-05-4
CMF C4 H6 O2



CM 2

CRN 74-85-1
CMF C2 H4

IC H01M; B32B
CC 77 (Electrochemistry)
ST elec **battery** separator; vinyl acetate ethylene binder **battery**; zinc anode elec **battery**; azodicarbonamide depolarizer elec **battery**
IT Flour
(absorbents from starch and, for Leclanche **dry cells**)
IT Electrolytic depolarizers
(azodicarbonamides, for Leclanche **dry cells**)
IT **Batteries, primary**
(**dry-cell**, Leclanche, with org. depolarizer and ethylene-vinyl acetate polymer separator)
IT Absorbents
(flour-starch, for Leclanche **dry cells**)
IT 9005-25-8, uses and miscellaneous
(adsorbents from flour and, for Leclanche **dry cells**)
IT **24937-78-8**
(binder, for Leclanche **dry cell** separators)

L119 ANSWER 30 OF 30 HCA COPYRIGHT 2004 ACS on STN
71:4228 Electrolyte **membranes** based on ethenesulfonic acid copolymers. Stoy, Artur; Kubin, Miroslav; Raab, Miroslav (Ceskoslov. Akad. Ved, Prague, Czech.). Abhandlungen der Saechsischen Akademie der Wissenschaften zu Leipzig, Mathematisch-Naturwissenschaftliche Klasse, 49(5), 257-65 (German)

1968. CODEN: ASAWAO. ISSN: 0365-6470.

AB Certain types of **electrolytic cells** energized by the reaction 2H2 + O2 = 2H2O have solid electrolytes in the form of cation exchange **membranes** which preferably consist of a hydrophobic skeleton (which is not swelled by the electrolyte soln.) in which 70% of a granular cation exchange agent is embedded. Homogenous **membranes** with cation exchanging acidic groups have better electrochem. properties but are swellable and change their dimensions considerably with concn. of the various ions. Stiffening with a textile material reduces the electrolytic qualities. Intramol. stiffening by copolymn. of an electrochem. inert monomer could be an advantage. Copolymers of ethenesulfonic acid (I) with acrylonitrile (II) can be considered as model substances. The large variability in using these copolymers in **membranes** for fuel cells lies in their soly. in volatile org. solvents and in nonvolatile but easily extractable org. solvents. II decreases swelling and makes possible an enduring orientation because of its high cohesive forces. Its resistance to hydrolysis is not inferior to that of the already employed copolymers with N,N'-methylene-bismethacrylamide and ethylene dimethacrylate. Ternary copolymers of ethenesulfonic acid with acrylamide-acrylonitrile were dissolved in aq. HCONMe2 to obtain **membranes** by casting onto a horizontal plate and stretching at various temps. in the swollen or nonswollen state. The stretched **membranes** were treated with HCHO to fix orientation and to reduce ultimate elongation at break and swelling. Casting on glass plates was adopted since casting on a Hg surface was not esp. successful. Binary copolymers of acrylonitrile-ethenesulfonic acid at mol. ratios 2:1 and 5:1 can be cast and the treatment with HCHO can be omitted. Acrylonitrile is copolymd. with Na ethenesulfonate in concd. aq. ZnCl2 yielding a rubbery elastic **membrane** which is stretched and washed with H2O. The copolymers are softer than the polymers of acrylonitrile alone. Copolymn. in ZnCl2 soln. (d. 1.95-2.05) between 2 glass plates takes place with NH4 persulfate-K pyrosulfite redox initiator at room temp. Addn. of 0.2-1.0% ethylene dimethacrylate reduces **tackiness** of the **membrane.** ZnCl2 must be removed by repeated washing in ice-water. The S content is 5 wt.% of the copolymer. The improved mech. properties are tabulated.

CC 37 (Plastics Fabrication and Uses)

ST ethenesulfonic acid copolymers; copolymers ethenesulfonic acid; acrylonitrile copolymers; cation exchange **membranes;** ion exchange **membranes;** fuel cell **membranes;** **electrolytic cell membranes**

IT **Membranes**
(cation-exchanging, for fuel cells)

IT Fuel cells
(**membranes** for, cation-exchanging)

IT Cation exchangers, preparation
(**membranes**, for fuel cells)
IT 25722-86-5, uses and miscellaneous 26966-21-2, uses and miscellaneous 26966-22-3, uses and miscellaneous
(cation-exchanging **membranes** from, for fuel cells)

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L120 ANSWER 1 OF 30 HCA COPYRIGHT 2004 ACS on STN
140:7140 Catalytic hydrogen vent filter for **batteries**.
Hockaday, Robert G.; Turner, Patrick S.; Bradford, Zachary R.; Dejohn, Marc D.; Navas, Carlos J.; Uhrich, F. Wade; Vaz, Heathcliff L.; Vazul, L. Luke (USA). U.S. Pat. Appl. Publ. US 2002182482 A1 20021205, 11 pp. (English). CODEN: USXXCO. APPLICATION: US 2001-870777 20010601.
AB A selective gas **permeable membrane** allows hydrogen to vent from a **battery** while preventing other gases from entering the **battery**. The surface of the filter membrane also catalytically combusts hydrogen and oxygen if both are evolved inside the **battery** and retains the resulting water for use in the **battery**. The membrane is made with a porous plastic substrate coated with a thin metal film permeable to hydrogen, and addnl. coatings. These coatings protect the surfaces, and catalytically combust hydrogen and oxygen.
IT **9002-88-4**, Polyethylene **9003-07-0**, Polypropylene
(porous; catalytic hydrogen vent filter for **batteries**)
RN 9002-88-4 HCA
CN Ethene, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 74-85-1
CMF C2 H4

$H_2C{=}CH_2$

RN 9003-07-0 HCA
CN 1-Propene, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 115-07-1
CMF C3 H6

$H_3C{-}CH{=}CH_2$

IC ICM H01M002-12
NCL 429086000; 429057000; 429056000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **battery** catalytic hydrogen vent filter
IT Combustion
Primary **batteries**
Secondary **batteries**
(catalytic hydrogen vent filter for **batteries**)
IT Polymer electrolytes
(coating; catalytic hydrogen vent filter for **batteries**)
IT Fluoropolymers, uses
Natural rubber, uses
Silicone rubber, uses
(coating; catalytic hydrogen vent filter for **batteries**)
IT Catalysts
(electrocatalysts; catalytic hydrogen vent filter for **batteries**)
IT Polysiloxanes, uses
(fluoro, coating; catalytic hydrogen vent filter for **batteries**)
IT Coating materials
(gas-permeable; catalytic hydrogen vent filter for **batteries**)
IT Transition metal alloys
Transition metal compounds
Transition metals, uses
(membrane; catalytic hydrogen vent filter for **batteries**)
IT Silicone rubber, uses
(nitrile-modified, coating; catalytic hydrogen vent filter for **batteries**)
IT Sulfonic acids, uses
(perfluoro, coating; catalytic hydrogen vent filter for **batteries**)
IT **Polysulfones**, uses
(polyether-, porous; catalytic hydrogen vent filter for **batteries**)
IT Polyethers, uses
(**polysulfone**-, porous; catalytic hydrogen vent filter for **batteries**)
IT **Ceramics**
Semiconductor materials
(porous; catalytic hydrogen vent filter for **batteries**)
IT **Glass**, uses
Metals, uses
Plastics, uses
Polycarbonates, uses

Polyesters, uses
Polyimides, uses
(porous; catalytic hydrogen vent filter for **batteries**)
IT Perfluoro compounds
(sulfonic acids, coating; catalytic hydrogen vent filter for **batteries**)
IT Ventilation, mechanical
(systems; catalytic hydrogen vent filter for **batteries**)
IT 7439-89-6, Iron, uses 7439-98-7, Molybdenum, uses 7440-02-0, Nickel, uses 7440-03-1, Niobium, uses 7440-05-3, Palladium, uses 7440-06-4, Platinum, uses 7440-18-8, Ruthenium, uses 7440-22-4, Silver, uses 7440-25-7, Tantalum, uses 7440-32-6, Titanium, uses 7440-33-7, Tungsten, uses 7440-47-3, Chromium, uses 7440-48-4, Cobalt, uses 7440-50-8, Copper, uses 7440-62-2, Vanadium, uses 7440-67-7, Zirconium, uses
(catalytic hydrogen vent filter for **batteries**)
IT 7782-44-7, Oxygen, processes
(catalytic hydrogen vent filter for **batteries**)
IT 1333-74-0, Hydrogen, processes
(catalytic hydrogen vent filter for **batteries**)
IT 7439-91-0, Lanthanum, uses
(catalytic hydrogen vent filter for **batteries**)
IT 9002-84-0, Ptfe 9002-86-2, Polyvinyl chloride 12196-72-4
(coating; catalytic hydrogen vent filter for **batteries**)
IT 12057-97-5 12683-48-6 12735-99-8 39286-82-3
(membrane; catalytic hydrogen vent filter for **batteries**)
IT **9002-88-4**, Polyethylene **9003-07-0**, Polypropylene
(porous; catalytic hydrogen vent filter for **batteries**)

L120 ANSWER 2 OF 30 HCA COPYRIGHT 2004 ACS on STN
139:55484 Nanobattery systems. Teeters, Dale; Fisher, S. Lane; Korzhova, Nina (The University of Tulsa, USA). U.S. US 6586133 B1 20030701, 13 pp. (English). CODEN: USXXAM. APPLICATION: US 2001-789147 20010220. PRIORITY: US 2000-PV184172 20000221; US 2000-PV213366 20000623.
AB A nano-**battery** or micro-**battery** is produced by a process which includes the steps of providing a membrane with a plurality of **pores**, filling the **membrane pores** with an electrolyte, and capping the filled pores with electrodes in communication with the electrolyte to form nano-**batteries** or micro-**batteries**.
IT **9003-53-6**, **Polystyrene 13463-67-7**, Titaniatio2, uses **25067-58-7**, Polyacetylene **25190-62-9**, Poly(p-phenylene)
(fabrication of nanobattery systems)
RN 9003-53-6 HCA
CN Benzene, ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 100-42-5
CMF C8 H8

$H_2C{=}CH{-}Ph$

RN 13463-67-7 HCA
CN Titanium oxide (TiO2) (8CI, 9CI) (CA INDEX NAME)

$O{=}Ti{=}O$

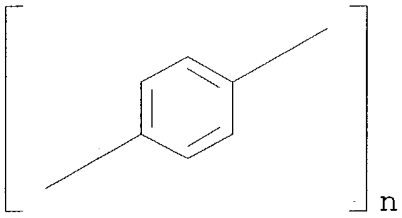
RN 25067-58-7 HCA
CN Ethyne, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 74-86-2
CMF C2 H2

$HC{\equiv}CH$

RN 25190-62-9 HCA
CN Poly(1,4-phenylene) (9CI) (CA INDEX NAME)



IC ICM H01M006-42
ICS H01M010-40
NCL 429152000; 429303000; 429317000; 429338000; 029623500
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT **Ceramic** membranes
Etching
Laser ablation
Primary **batteries**
Secondary **batteries**
(fabrication of nanobattery systems)

IT 1312-42-1, Indium selenide Inse 1313-13-9, Manganese oxide mno2, uses 1313-27-5, Molybdenum oxide moo3, uses 1314-35-8, Tungsten oxide (WO3), uses 1314-62-1, Vanadium oxide (V2O5), uses 1317-33-5, Molybdenum disulfide, uses 2432-87-3, Dioctyl sebacate 7440-44-0, Carbon, uses 7782-42-5, Graphite, uses 9002-86-2, Polyvinyl chloride 9002-89-5, Polyvinyl alcohol **9003-53-6**, **Polystyrene** 11113-63-6, Graphite fluoride 12017-96-8, Chromium lithium oxide crlio2 12031-65-1, Lithium nickel oxide linio2 12037-42-2, Vanadium oxide v6o13 12039-13-3, Titanium sulfide (TiS2) 12057-17-9, Lithium manganese oxide limn2o4 12058-18-3, Molybdenum selenide mose2 12067-75-3, Titanium telluride tite2 12158-49-5, Chromium oxide cr3o8 12162-87-7, Lithiumvanadium oxide livo2 12190-79-3, Cobalt lithium oxide colio2 12423-04-0, Lithium vanadium oxide liv3o8 **13463-67-7**, Titaniatio2, uses 24937-79-9, Pvdf 25014-41-9, Polyacrylonitrile **25067-58-7**, Polyacetylene **25190-62-9**, Poly(p-phenylene) 25233-30-1, Polyaniline 25322-68-3, Peo 25322-69-4, Polypropylene oxide 30604-81-0, Polypyrrole 33454-82-9, Lithium triflate 34801-99-5, Polyvinylferrocene 42821-48-7, Nickel thiophosphate NiPS3 51311-17-2, Carbon fluoride 60650-03-5, Titanium selenide tise3 87439-82-5
(fabrication of nanobattery systems)

L120 ANSWER 3 OF 30 HCA COPYRIGHT 2004 ACS on STN
138:58950 Separator for secondary nonaqueous electrolyte **battery** and the **battery**. Nishikawa, Satoshi; Omichi, Takahiro; Honmoto, Hiroyuki; Sano, Hiroki (Teijin Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2003007279 A2 20030110, 8 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2001-187873 20010621.

AB The separator is a **porous** composite **membrane**, comprising a nonwoven fabric sheet and a porous inorg. **filler** contg. electrolyte swellable polymer, and has av. thickness 10-35 μm and base wt. 10-25 g/m2. The **battery** is a Li **battery**.

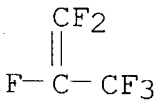
IT **9011-17-0**, Hexafluoropropylene-vinylidene fluoride copolymer
(porous inorg. **filler** contg. electrolyte swellable polymer/nonwoven PET fabric composite separators for secondary lithium **batteries**)

RN 9011-17-0 HCA

CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)

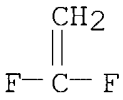
CM 1

CRN 116-15-4
CMF C3 F6



CM 2

CRN 75-38-7
CMF C2 H2 F2



IC ICM H01M002-16
ICS H01M002-02; H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST secondary lithium **battery** nonwoven fabric composite separator; porous polymer composite separator secondary lithium **battery**
IT Secondary **battery** separators
(porous inorg. **filler** contg. electrolyte swellable polymer/nonwoven PET fabric composite separators for secondary lithium **batteries**)
IT Polyester fibers, uses
Polyesters, uses
(porous inorg. **filler** contg. electrolyte swellable polymer/nonwoven PET fabric composite separators for secondary lithium **batteries**)
IT 7631-86-9, Silica, uses **9011-17-0**, Hexafluoropropylene-vinylidene fluoride copolymer 25038-59-9, Poly(ethylene terephthalate), uses
(porous inorg. **filler** contg. electrolyte swellable polymer/nonwoven PET fabric composite separators for secondary lithium **batteries**)

L120 ANSWER 4 OF 30 HCA COPYRIGHT 2004 ACS on STN
137:355434 Separator for polymer **battery**. Wensley, Glen C. (Celgard Inc., USA). Eur. Pat. Appl. EP 1256991 A2 20021113, 6 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR. (English). CODEN: EPXXDW. APPLICATION: EP 2002-9115 20020424. PRIORITY: US 2001-851479 20010508.
AB The instant invention is a separator for a lithium polymer **battery**. The separator comprises a membrane and a coating. The membrane has a first surface, a second surface, and a plurality

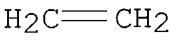
of micropores extending from the first surface to the second surface. The coating covers the membrane, but does not fill the plurality of micropores. The coating comprises a gel-forming polymer and a plasticizer in a wt. ratio of 1:0.5 to 1:3.

IT **9002-88-4**, Polyethylene **9003-07-0**, Polypropylene **9011-17-0**, Hexafluoropropylene-vinylidene fluoride copolymer (separator for polymer **battery**)

RN 9002-88-4 HCA
CN Ethene, homopolymer (9CI) (CA INDEX NAME)

CM 1

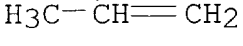
CRN 74-85-1
CMF C2 H4



RN 9003-07-0 HCA
CN 1-Propene, homopolymer (9CI) (CA INDEX NAME)

CM 1

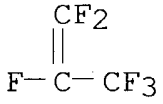
CRN 115-07-1
CMF C3 H6



RN 9011-17-0 HCA
CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)

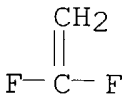
CM 1

CRN 116-15-4
CMF C3 F6



CM 2

CRN 75-38-7
CMF C2 H2 F2

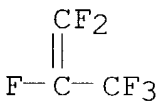


IC ICM H01M002-16
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST separator polymer **battery**
IT Pore
(micropore; separator for polymer **battery**)
IT **Membranes**, nonbiological
(**microporous**; separator for polymer **battery**)
IT Plasticizers
Primary **battery** separators
Secondary **battery** separators
(separator for polymer **battery**)
IT **9002-88-4**, Polyethylene **9003-07-0**, Polypropylene
9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer
25684-76-8, Tetrafluoroethylene-vinylidene fluoride copolymer
177416-53-4 474533-92-1
(separator for polymer **battery**)
IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate
4437-85-8, Butylene carbonate
(separator for polymer **battery**)

L120 ANSWER 5 OF 30 HCA COPYRIGHT 2004 ACS on STN
137:219572 Proton-selective conducting **membranes** for electrochemical systems. Fleischer, Niles A.; Manassen, Joost; Linder, Charles; Mazor, Nitsa; Meitav, Arieh; Yakupov, Ilia (E.C.R.-Electro-Chemical Research Ltd., Israel). U.S. Pat. Appl. Publ. US 2002127474 A1 20020912, 24 pp. (English). CODEN: USXXCO. APPLICATION: US 2001-756133 20010109.
AB A **membrane** comprises : (a) a hydrophobic matrix polymer, and (b) a hydrophilic non-ionic polymer, wherein the hydrophobic polymer and the hydrophilic polymer are disposed so as to form a dense selectively proton-conducting **membrane**. The microstructure of such a **membrane** can be tailored to specific functionality requirements, such as proton cond. vs. proton selectivity, and selectivity to particular species.
IT **9011-17-0**, Hexafluoropropylene-vinylidene fluoride copolymer
(proton-selective conducting **membranes** for electrochem. systems)
RN 9011-17-0 HCA
CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)

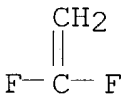
CM 1

CRN 116-15-4
CMF C3 F6



CM 2

CRN 75-38-7
CMF C2 H2 F2



IC ICM H01M010-40
ICS C08J005-22; H01M008-10; H01M004-50; H01M004-38; H01G009-038
NCL 429309000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, 72, 76
ST **battery** proton selective conducting **membrane**; fuel cell proton selective conducting **membrane**; capacitor proton selective conducting **membrane**
IT Sulfones
(Ph, polymers; proton-selective conducting **membranes** for electrochem. systems)
IT **Battery** electrolytes
Capacitors
Fuel **cell electrolytes**
Fuel cells
Membranes, nonbiological
Secondary **batteries**
(proton-selective conducting **membranes** for electrochem. systems)
IT Fluoropolymers, uses
Polyoxyphenylenes
Polysulfones, uses
(proton-selective conducting **membranes** for electrochem. systems)
IT 9003-39-8, Polyvinylpyrrolidone **9011-17-0**, Hexafluoropropylene-vinylidene fluoride copolymer 9041-80-9, Polyphenylene oxide 24937-79-9, Pvdf 25667-42-9 25668-34-2,

Durethan T40 25805-17-8, Poly(2-ethyl-2-oxazoline) 26375-28-0, Poly(2-methyl-2-oxazoline)
(proton-selective conducting **membranes** for electrochem. systems)
IT 1333-74-0, Hydrogen, uses
(proton-selective conducting **membranes** for electrochem. systems)

L120 ANSWER 6 OF 30 HCA COPYRIGHT 2004 ACS on STN
137:204015 Electrochemical device using multicomponent composite **membrane** film. Lee, Seung-Jin; Lee, Hyang-Mok; Ahn, Soon-Ho; Cho, Jin-Yeon; Yong, Hyun-Hang; Lee, Hyung-Keun; Lee, Sang-Young; Song, Heon-Sik; Ahn, Byeong-In; Park, Soon-Yong; Kyung, You-jin (LG Chem, Ltd., S. Korea; et al.). PCT Int. Appl. WO 2002071509 A1 20020912, 56 pp. DESIGNATED STATES: W: CN, JP, US; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR. (English). CODEN: PIXXD2. APPLICATION: WO 2002-KR377 20020305. PRIORITY: KR 2001-11192 20010305.
AB The present invention provides an electrochem. element, wherein a multi-component composite film comprising (a) polymer support layer film and (b) a porous gellable polymer layer which is formed on either or both sides of the support layer film of (a), wherein the support layer film of (a) and the gellable polymer layer of (b) are unified with each other without an interface between them.
IT **9003-53-6, Polystyrene 9011-17-0,** Hexafluoropropylene-vinylidene fluoride copolymer
(electrochem. device using multicomponent composite **membrane** film)
RN 9003-53-6 HCA
CN Benzene, ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

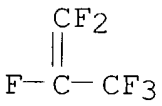
CRN 100-42-5
CMF C8 H8

H_2C═CH—Ph

RN 9011-17-0 HCA
CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)

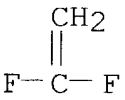
CM 1

CRN 116-15-4
CMF C3 F6



CM 2

CRN 75-38-7
CMF C2 H2 F2



IC ICM H01M002-14
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST **battery** multicomponent composite **membrane** film
IT Polyesters, uses
(acrylates; electrochem. device using multicomponent composite **membrane** film)
IT Secondary **batteries**
Secondary **battery** separators
(electrochem. device using multicomponent composite **membrane** film)
IT Fluoropolymers, uses
Polyamides, uses
Polycarbonates, uses
Polyesters, uses
Polyoxyalkylenes, uses
Polyoxyphenylenes
Polysiloxanes, uses
Polysulfones, uses
Polyurethanes, uses
(electrochem. device using multicomponent composite **membrane** film)
IT Polyolefins
(ionomers; electrochem. device using multicomponent composite **membrane** film)
IT Ionomers
(polyolefins; electrochem. device using multicomponent composite **membrane** film)
IT Polymers, uses
(porous gellable; electrochem. device using multicomponent composite **membrane** film)
IT 556-65-0, Lithium thiocyanate 7791-03-9, Lithium perchlorate

9002-85-1, Polyvinylidene chloride 9002-88-4, Polyethylene 9003-01-4, Polyacrylic acid 9003-05-8, Polyacrylamide 9003-07-0, Polypropylene 9003-20-7, Polyvinyl acetate 9003-39-8, Polyvinylpyrrolidone **9003-53-6, Polystyrene** 9010-75-7, Chlorotrifluoroethylene-vinylidene fluoride copolymer 9010-79-1, Ethylene-propylene copolymer 9011-14-7, Pmma **9011-17-0**, Hexafluoropropylene-vinylidene fluoride copolymer 9016-80-2, Polymethyl pentene 9019-29-8, Ethylene-butylene copolymer 9041-80-9, Polyphenylene oxide 14283-07-9, Lithium tetrafluoroborate 24937-79-9, Polyvinylidene fluoride 25014-41-9, Polyacrylonitrile 25190-06-1, Polybutylene oxide 25322-68-3, Peo 25322-69-4, Polypropylene oxide 25568-84-7D, Polycyclopentadiene, hydrogenated 29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium triflate 39410-01-0, Butylene-styrene copolymer 57271-36-0, Butylene-ethylene-styrene copolymer 57619-91-7, Polytetraethylene glycol diacrylate 70800-37-2, Ethylene-octene copolymer 88117-78-6, Ethylene-hexene copolymer 90076-65-6
(electrochem. device using multicomponent composite **membrane** film)

IT 1303-86-2, Boron oxide b2o3, uses 1309-48-4, Magnesia, uses 1344-28-1, Alumina, uses 7631-86-9, Silica, uses 13463-67-7, Titania, uses
(electrochem. device using multicomponent composite **membrane** film)

IT 60-29-7, Diethyl ether, uses 64-17-5, Ethanol, uses 64-19-7, Acetic acid, uses 67-64-1, Acetone, uses 67-68-5, Dmso, uses 68-12-2, Dmf, uses 71-23-8, n-Propanol, uses 71-36-3, n-Butanol, uses 71-43-2, Benzene, uses 108-88-3, Toluene, uses 108-93-0, Cyclohexanol, uses 109-99-9, Thf, uses 110-54-3, n-Hexane, uses 110-82-7, Cyclohexane, uses 123-91-1, Dioxane, uses 127-19-5, Dimethyl acetamide 141-78-6, Ethyl acetate, uses 872-50-4, 1-Methyl-2-pyrrolidone, uses 1330-20-7, Xylene, uses 7732-18-5, Water, uses
(electrochem. device using multicomponent composite **membrane** film)

L120 ANSWER 7 OF 30 HCA COPYRIGHT 2004 ACS on STN

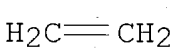
137:111746 Separator having triple-layer polymer membrane for lithium **battery**. Tsujioka, Norio (Asahi Kasei Corporation, Japan). Jpn. Kokai Tokkyo Koho JP 2002216734 A2 20020802, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2001-7420 20010116.

AB The title separator comprises a triple-layer **porous** **membrane** consisting of surface layers contg. vinylidene fluoride copolymer and having m.p. ≤145° and an interlayer contg. polyolefin and having m.p. ≤140°. The separator provides prevention of electrolyte leakage and good shut-down performance for safety.

IT **9002-88-4**, Polyethylene
(HDPE, interlayer; separator having triple-layer polymer membrane for lithium **battery**)
RN 9002-88-4 HCA
CN Ethene, homopolymer (9CI) (CA INDEX NAME)

CM 1

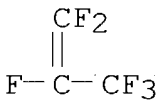
CRN 74-85-1
CMF C2 H4



IT **9011-17-0**, Kynar 2800
(surface layer; separator having triple-layer polymer membrane for lithium **battery**)
RN 9011-17-0 HCA
CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)

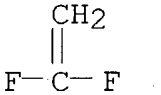
CM 1

CRN 116-15-4
CMF C3 F6



CM 2

CRN 75-38-7
CMF C2 H2 F2



IC ICM H01M002-16
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST separator vinylidene fluoride polymer polyolefin lithium **battery** safety
IT Polyolefins

(interlayer; separator having triple-layer polymer membrane for lithium **battery**)

IT Primary **battery** separators
Safety
Secondary **battery** separators
(separator having triple-layer polymer membrane for lithium **battery**)

IT Fluoropolymers, uses
(surface layer; separator having triple-layer polymer membrane for lithium **battery**)

IT **9002-88-4**, Polyethylene
(HDPE, interlayer; separator having triple-layer polymer membrane for lithium **battery**)

IT **9011-17-0**, Kynar 2800
(surface layer; separator having triple-layer polymer membrane for lithium **battery**)

L120 ANSWER 8 OF 30 HCA COPYRIGHT 2004 ACS on STN
137:49736 **Titania** nanoparticle-containing polymer electrolyte and its manufacture. Kim, Kwan-Man; Kyu, Kwan-Son; Park, Nam-Gyu; Park, Yong-Jin; Chung, Soon-Ho (Electronics and Telecommunications Research Institute, S. Korea). Jpn. Kokai Tokkyo Koho JP 2002190324 A2 20020705, 6 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2000-403356 20001228. PRIORITY: KR 2000-73385 20001205.

AB The title polymer electrolyte is manufd. by dissolving a vinylidene fluoride-hexafluoropropylene copolymer and nanometer-size **TiO2** particles in a solvent, forming a **porous** polymer **membrane**, and then impregnating an electrolyte soln. The electrolyte soln. may contain a Li salt and an org. solvent. The polymer electrolyte, esp. suitable for secondary Li **batteries**, has high ion cond. and low interfacial resistance.

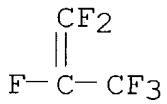
IT **9011-17-0**, Hexafluoropropene-vinylidene fluoride copolymer **13463-67-7**, PC 101, uses
(manuf. of **titania** nanoparticle/fluoropolymer composite contg. impregnated electrolyte for polymer electrolyte)

RN 9011-17-0 HCA

CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)

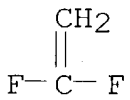
CM 1

CRN 116-15-4
CMF C3 F6

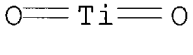


CM 2

CRN 75-38-7
CMF C2 H2 F2



RN 13463-67-7 HCA
CN Titanium oxide (TiO2) (8CI, 9CI) (CA INDEX NAME)



IC ICM H01M010-40
ICS C08K003-22; C08L027-16; C08L027-20; H01B013-00
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, 76
ST **titania** nanoparticle fluoropolymer electrolyte lithium **battery**
IT Fluoro rubber
(hexafluoropropene-vinylidene fluoride, KynarFlex 2801; manuf. of **titania** nanoparticle/fluoropolymer composite contg. impregnated electrolyte for polymer electrolyte)
IT **Battery** electrolytes
Nanoparticles
Polymer electrolytes
(manuf. of **titania** nanoparticle/fluoropolymer composite contg. impregnated electrolyte for polymer electrolyte)
IT Fluoropolymers, uses
(manuf. of **titania** nanoparticle/fluoropolymer composite contg. impregnated electrolyte for polymer electrolyte)
IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate
(electrolyte solvent; manuf. of **titania** nanoparticle/fluoropolymer composite contg. impregnated electrolyte for polymer electrolyte)
IT 7791-03-9, Lithium perchlorate 14283-07-9, Lithium

tetrafluoroborate 29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium trifluoromethanesulfonate 90076-65-6, Lithium bis(trifluoromethylsulfonyl)amide
(electrolyte; manuf. of **titania** nanoparticle/fluoropolymer composite contg. impregnated electrolyte for polymer electrolyte)

IT **9011-17-0**, Hexafluoropropene-vinylidene fluoride copolymer **13463-67-7**, PC 101, uses
(manuf. of **titania** nanoparticle/fluoropolymer composite contg. impregnated electrolyte for polymer electrolyte)

IT 67-64-1, Acetone, uses 109-99-9, Tetrahydrofuran, uses
(solvent; manuf. of **titania** nanoparticle/fluoropolymer composite contg. impregnated electrolyte for polymer electrolyte)

L120 ANSWER 9 OF 30 HCA COPYRIGHT 2004 ACS on STN

136:404308 High energy density stack **battery** structure without the existence of a die volume by stacking cell electrodes. Jan, Yih-song (Industrial Technology Research Institute, Taiwan). U.S. US 6399240 B1 20020604, 18 pp. (English). CODEN: USXXAM. APPLICATION: US 2000-535465 20000323.

AB The present invention relates to a stack **battery** structure, which possesses a high energy d. and can avoid the existence of a die vol. Through the means of sepg. binder and active materials and of rearranging the position of binder, the pos./neg. electrode thus fabricated can be glued with a polymeric separator **membrane** via the binder in the stacking and pressuring process without affecting the percentage of active materials in each unit of wt. This stack **battery** structure obviates the problem of a die vol. caused by rolling the cell electrode into a spiral in the prior art. It also increases the energy d. of the **battery.**

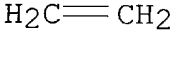
IT **9002-88-4**, Polyethylene **9003-07-0**, Polypropylene **9003-55-8**, Butadiene-styrene copolymer **24937-78-8**, Ethylene-vinyl acetate copolymer **25038-32-8**, Isoprene-styrene copolymer
(binder; high energy d. stack **battery** structure without existence of die vol. by stacking cell electrodes)

RN 9002-88-4 HCA

CN Ethene, homopolymer (9CI) (CA INDEX NAME)

CM 1

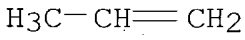
CRN 74-85-1
CMF C2 H4



RN 9003-07-0 HCA
CN 1-Propene, homopolymer (9CI) (CA INDEX NAME)

CM 1

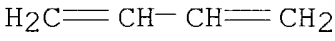
CRN 115-07-1
CMF C3 H6



RN 9003-55-8 HCA
CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

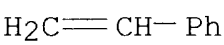
CM 1

CRN 106-99-0
CMF C4 H6



CM 2

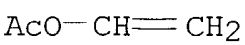
CRN 100-42-5
CMF C8 H8



RN 24937-78-8 HCA
CN Acetic acid ethenyl ester, polymer with ethene (9CI) (CA INDEX NAME)

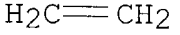
CM 1

CRN 108-05-4
CMF C4 H6 O2



CM 2

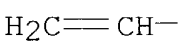
CRN 74-85-1
CMF C2 H4



RN 25038-32-8 HCA
CN Benzene, ethenyl-, polymer with 2-methyl-1,3-butadiene (9CI) (CA INDEX NAME)

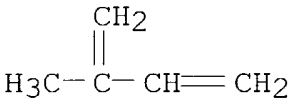
CM 1

CRN 100-42-5
CMF C8 H8



CM 2

CRN 78-79-5
CMF C5 H8



IC ICM H01M002-16
ICS H01M002-18
NCL 429137000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST **battery** structure die vol free
IT Polyesters, uses
(acrylic, ethylene, binder; high energy d. stack **battery** structure without existence of die vol. by stacking cell electrodes)
IT Polyamines
(arom., binder; high energy d. stack **battery** structure without existence of die vol. by stacking cell electrodes)
IT Acrylic polymers, uses
Epoxy resins, uses
Polybenzimidazoles
Polyesters, uses
Polyquinoxalines
Polysiloxanes, uses
Rubber, uses
(binder; high energy d. stack **battery** structure without

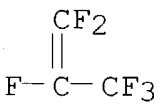
existence of die vol. by stacking cell electrodes)
IT Coating process
(die; high energy d. stack **battery** structure without existence of die vol. by stacking cell electrodes)
IT Screen printing
Secondary **batteries**
(high energy d. stack **battery** structure without existence of die vol. by stacking cell electrodes)
IT Polyquinoxalines
(polyphenylquinoxalines, binder; high energy d. stack **battery** structure without existence of die vol. by stacking cell electrodes)
IT **9002-88-4**, Polyethylene **9003-07-0**, Polypropylene **9003-55-8**, Butadiene-styrene copolymer 18496-25-8D, Sulfide, compd. **24937-78-8**, Ethylene-vinyl acetate copolymer **25038-32-8**, Isoprene-styrene copolymer
(binder; high energy d. stack **battery** structure without existence of die vol. by stacking cell electrodes)
IT 186491-07-6, Cyanide acetate
(ester, binder; high energy d. stack **battery** structure without existence of die vol. by stacking cell electrodes)

L120 ANSWER 10 OF 30 HCA COPYRIGHT 2004 ACS on STN
136:343339 Mesoporous separator membrane for secondary lithium **battery**, its manufacture, electrode-separator laminate for the **battery**, and the **battery**. Dupasquier, Aurelien; Tarascon, Jean Marie (Valence Technology, Inc., USA). Jpn. Kokai Tokkyo Koho JP 2002134092 A2 20020510, 33 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2001-203606 20010704. PRIORITY: US 2000-689170 20001012.
AB The **membrane** has **pores** and inert **filler** particles in a polymer matrix, with at least part of the particles inside the pores. The membrane is prepd. by mixing the polymer, a 1st volatile solvent for the polymer, and a 2nd solvent sol., less volatile the the 1st and miscible with the 1st solvent but insol. for the polymer; casting the mixt. to form a layer; evapg. the 1st solvent while leaving the 2nd solvent in the layer, to gel the polymer in the uniformly distributed liq. particles; continuing the evapn. after the completion of the gelling to form self-sustaining membrane; and removing the 2nd solvent. The polymer is preferably a C3F6-vinylidene fluoride copolymer, and the casting mixt. may contain particles of an inert **filler**. Secondary Li **battery** has a laminate contg. the separator membrane between a cathode and an anode.
IT **9011-17-0**, Hexafluoropropylene-vinylidene fluoride copolymer
(structure and manuf. of mesoporous separator membranes for electrode-separator laminates in secondary lithium **batteries**)

RN 9011-17-0 HCA
CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)

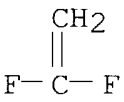
CM 1

CRN 116-15-4
CMF C3 F6



CM 2

CRN 75-38-7
CMF C2 H2 F2



IC ICM H01M002-16
ICS C08J009-28; C08K003-36; C08L027-16; H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST secondary lithium **battery** mesoporous separator electrode laminate
IT Secondary **batteries**
(lithium; manuf. of mesoporous separator membranes for electrode-separator laminates in secondary lithium **batteries**)
IT Carbonaceous materials (technological products)
(manuf. of mesoporous separator membranes for electrode-separator laminates in secondary lithium **batteries**)
IT Secondary **battery** separators
(structure and manuf. of mesoporous separator membranes for electrode-separator laminates in secondary lithium **batteries**)
IT 12057-17-9, Lithium manganese oxide (LiMn2O4)
(manuf. of mesoporous separator membranes for electrode-separator laminates in secondary lithium **batteries**)
IT 64-17-5, Ethanol, uses 67-56-1, Methanol, uses 67-63-0, Iso-propanol, uses 67-64-1, Acetone, uses
(solvents in manuf. of mesoporous separator membranes for electrode-separator laminates in secondary lithium

batteries)

IT 7631-86-9, Silica, uses **9011-17-0**, Hexafluoropropylene-vinylidene fluoride copolymer
(structure and manuf. of mesoporous separator membranes for electrode-separator laminates in secondary lithium **batteries**)

L120 ANSWER 11 OF 30 HCA COPYRIGHT 2004 ACS on STN
136:250319 Fabrication of pocketed electrode plate for use in lithium ion secondary **battery**. Cho, Su-Jung; Chung, Geun-Chang; Hwang, Sun-Yoo (Korea Power Cell Inc., S. Korea). PCT Int. Appl. WO 2002025758 A1 20020328, 25 pp. DESIGNATED STATES: W: CN, JP, US; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR. (English). CODEN: PIXXD2. APPLICATION: WO 2001-KR1545 20010914. PRIORITY: KR 2000-56104 20000925.

AB A pocketed electrode plate for use in a lithium ion secondary **battery**, its manufg. method and a lithium ion secondary **battery** using the same are disclosed. The pocketed electrode plate of the present invention comprises: an electrode plate which has a coating layer of an electrode active material and a non-coated projection portion, the electrode active material being capable of reversibly inserting and extg. lithium ions; sepg. **membranes** which cover both sides of the electrode plate while exposing only the non-coated projection portion; and an insulating polymer film which contains an adhesive component and is placed between the sepg. **membranes** at least on the portion of the external edge of the electrode plate in order to bond and fix the sepg. **membranes**. A plurality of pocketed electrode plates may be mass produced by using a pressing roll. These pocketed electrode plates are used to manuf. ultra-slim lithium ion secondary **batteries**. According to the present invention, the energy d. of the finished lithium ion secondary **battery** can be increased significantly due to better utilization of the vol. inside the **battery** container.

IT **9002-88-4**, Polyethylene **24937-78-8**, Ethylene-vinyl acetate copolymer
(adhesive; fabrication of pocketed electrode plate for use in lithium ion secondary **battery**)

RN 9002-88-4 HCA
CN Ethene, homopolymer (9CI) (CA INDEX NAME)

CM 1

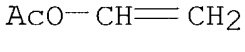
CRN 74-85-1
CMF C2 H4

$H_2C{=}CH_2$

RN 24937-78-8 HCA
CN Acetic acid ethenyl ester, polymer with ethene (9CI) (CA INDEX NAME)

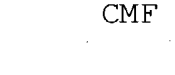
CM 1

CRN 108-05-4
CMF C4 H6 O2



CM 2

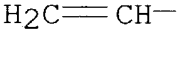
CRN 74-85-1
CMF C2 H4



IT **9003-53-6**, Polystyrene
(insulator film; fabrication of pocketed electrode plate for use in lithium ion secondary **battery**)
RN 9003-53-6 HCA
CN Benzene, ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 100-42-5
CMF C8 H8



IC ICM H01M004-02
ICS H01M010-04; H01M010-38
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST lithium ion secondary **battery** pocketed electrode plate
IT Ionomers
Polyvinyl butyrals
(adhesive; fabrication of pocketed electrode plate for use in lithium ion secondary **battery**)
IT **Battery** electrodes
(fabrication of pocketed electrode plate for use in lithium ion secondary **battery**)

IT Acrylic polymers, uses
Fluoropolymers, uses
Polyamides, uses
Polycarbonates, uses
Polyesters, uses
Polyimides, uses
Polyolefins
Polyoxymethylenes, uses
(insulator film; fabrication of pocketed electrode plate for use in lithium ion secondary **battery**)

IT Secondary **batteries**
(lithium; fabrication of pocketed electrode plate for use in lithium ion secondary **battery**)

IT **9002-88-4**, Polyethylene 9003-20-7, Polyvinylacetate 9010-77-9, Acrylic acid-ethylene copolymer **24937-78-8**, Ethylene-vinyl acetate copolymer 146876-38-2, Ethylene-ethyl acetate copolymer
(adhesive; fabrication of pocketed electrode plate for use in lithium ion secondary **battery**)

IT **9003-53-6**, Polystyrene 9003-56-9, Acrylonitrile-butadiene-styrene polymer
(insulator film; fabrication of pocketed electrode plate for use in lithium ion secondary **battery**)

L120 ANSWER 12 OF 30 HCA COPYRIGHT 2004 ACS on STN
136:55876 Multi-component composite **membrane** and method for preparing the same. Lee, Sang-Young; Ahn, Byeong-In; Park, Soon-Yong; Kyung, You-Jin; Song, Heon-Sik (LG Chemical Co. Ltd., S. Korea). PCT Int. Appl. WO 2001097957 A1 **20011227**, 23 pp. DESIGNATED STATES: W: CN, JP, US; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR. (English). CODEN: PIXXD2. APPLICATION: WO 2001-KR1076 20010622. PRIORITY: KR 2000-34948 20000623.

AB The present invention relates to a multi-component composite sep. **membrane** and method for prepg. the same, and it provides a composite **membrane** comprising active layers and support layers, wherein the support layers are located on the interior side of the **membrane** and the active layers are located on the exterior side of the **membrane.**

IT **9003-53-6, Polystyrene 9011-17-0**, Polyvinylidene fluoride-hexafluoropropylene
(multi-component composite **membrane** and method for prepg. the same)

RN 9003-53-6 HCA

CN Benzene, ethenyl-, homopolymer (9CI) (CA INDEX NAME)

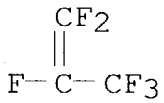
CM 1

CRN 100-42-5
CMF C8 H8

RN 9011-17-0 HCA
CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)

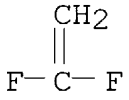
CM 1

CRN 116-15-4
CMF C3 F6



CM 2

CRN 75-38-7
CMF C2 H2 F2



IC ICM B01D071-06
CC 48-1 (Unit Operations and Processes)
ST composite **membrane**
IT **Membranes**, nonbiological
(composite; multi-component composite **membrane** and method for prepg. the same)
IT Drugs
(delivery, patches; multi-component composite **membrane** and method for prepg. the same)
IT Pervaporation
Primary **battery** separators
Reverse osmosis
Secondary **batteries**
Secondary **battery** separators
Separators
(multi-component composite **membrane** and method for prepg. the same)

IT Fluoropolymers, reactions
Polyamides, reactions
Polycarbonates, reactions
Polyesters, reactions
Polyolefins
Polyoxyalkylenes, reactions
Polysiloxanes, reactions
Polysulfones, reactions
Polyurethanes, reactions
(multi-component composite **membrane** and method for prepg. the same)

IT 60-29-7, Diethyl ether, reactions 64-17-5, Ethanol, reactions 64-19-7, Acetic acid, reactions 67-64-1, Acetone, reactions 67-68-5, Dimethyl sulfoxide, reactions 68-12-2, Dimethylformamide, reactions 71-23-8, n-Propanol, reactions 71-36-3, n-Butanol, reactions 71-43-2, Benzene, reactions 108-88-3, Toluene, reactions 108-93-0, Cyclohexanol, reactions 109-99-9, Tetrahydrofuran, reactions 110-54-3, n-Hexane, reactions 110-82-7, Cyclohexane, reactions 123-91-1, Dioxane, reactions 127-19-5, Dimethylacetamide 141-78-6, Ethyl acetate, reactions 872-50-4, 1-Methyl-2-pyrrolidone, reactions 1330-20-7, Xylene, reactions 7732-18-5, Water, reactions 9002-85-1, Polyvinylidene chloride 9002-88-4, Polyethylene 9003-01-4, Polyacrylic acid 9003-05-8, Polyacrylamide 9003-07-0, Polypropylene 9003-20-7, Polyvinylacetate 9003-39-8, Polyvinylpyrrolidone **9003-53-6**, **Polystyrene** 9010-79-1, Ethylene-propylene copolymer **9011-17-0**, Polyvinylidene fluoride-hexafluoropropylene 9016-80-2, Poly-methylpentene 9019-29-8, Ethylene-butylene copolymer 9041-80-9, Polyphenylene oxide 24937-79-9, Kynar 461 25014-41-9, Polyacrylonitrile 25190-06-1, Polybutylene oxide 25213-02-9, Ethylene-hexene copolymer 25322-68-3, Polyethylene oxide 25322-69-4, Polypropylene oxide 25568-84-7D, Cyclopentadiene homopolymer, hydrogenated 39410-01-0, -Butylene-styrene copolymer 57271-36-0, Butylene-ethylene-styrene copolymer 57619-91-7, Polytetraethylene glycol diacrylate 70800-37-2, Ethylene-octene copolymer
(multi-component composite **membrane** and method for prepg. the same)

L120 ANSWER 13 OF 30 HCA COPYRIGHT 2004 ACS on STN
136:9105 Membrane exchange humidifiers for use in humidifying reactant streams for solid polymer **electrolyte** fuel **cell** systems. Mossman, Alexander Douglas (Can.). U.S. Pat. Appl. Publ. US 2001046616 A1 **20011129**, 13 pp., Cont.-in-part of U.S. Ser. No. 521,228. (English). CODEN: USXXCO. APPLICATION: US 2001-800751 20010307. PRIORITY: US 2000-521228 20000308.

AB A membrane exchange humidifier employs a water **permeable** **membrane** comprising a **microporous** polymer and a

hydrophilic additive. In operation, the membrane preferably has favorable water transmission properties and resists transmission of reactant gas or other components. The membrane is suitable for use even when permeable in its dry condition to the wet or dry gases in the humidifier, and/or when the wet and dry gases are of different compn. By wetting the membrane, the presence of an amt. of liq. water in the wet gas can reduce gas transmission through the membrane to an acceptable level. The humidifier is useful in fuel cell systems in which a reactant gas supply stream, such as the oxidant supply stream, is humidified primarily using water vapor from a fuel cell reactant exhaust stream. The humidifier is particularly suitable for use in conjunction with solid polymer fuel cell systems. The improved mech. and welding properties of the membrane allow for a simpler humidifier configuration.

IT **9002-88-4**, Polyethylene
(membrane exchange humidifiers for use in humidifying reactant streams for solid polymer **electrolyte** fuel **cell** systems)
RN 9002-88-4 HCA
CN Ethene, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 74-85-1
CMF C2 H4

$H_2C{=}CH_2$

IT **1344-28-1**, **Alumina**, uses
(membrane exchange humidifiers for use in humidifying reactant streams for solid polymer **electrolyte** fuel **cell** systems)
RN 1344-28-1 HCA
CN Aluminum oxide (Al2O3) (8CI, 9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
IC ICM H01M008-04
ICS H01M008-10
NCL 429013000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST humidifier polymer **electrolyte** fuel **cell** reactant humidification
IT Polyolefin fibers
(ethylene, Tyvek, membrane; membrane exchange humidifiers for use in humidifying reactant streams for solid polymer **electrolyte** fuel **cell** systems)
IT Polyoxyalkylenes, uses

(fluorine- and sulfo-contg., ionomers; membrane exchange humidifiers for use in humidifying reactant streams for solid polymer **electrolyte** fuel **cell** systems)

IT Latex
Membranes, nonbiological
Solid state fuel cells
Wetting
(membrane exchange humidifiers for use in humidifying reactant streams for solid polymer **electrolyte** fuel **cell** systems)

IT Synthetic rubber, uses
(membrane exchange humidifiers for use in humidifying reactant streams for solid polymer **electrolyte** fuel **cell** systems)

IT Polyamide fibers, uses
Polyesters, uses
Polysulfones, uses
(membrane exchange humidifiers for use in humidifying reactant streams for solid polymer **electrolyte** fuel **cell** systems)

IT **Polysulfones**, uses
(polyether-; membrane exchange humidifiers for use in humidifying reactant streams for solid polymer **electrolyte** fuel **cell** systems)

IT Fluoropolymers, uses
(polyoxyalkylene-, sulfo-contg., ionomers; membrane exchange humidifiers for use in humidifying reactant streams for solid polymer **electrolyte** fuel **cell** systems)

IT Ionomers
(polyoxyalkylenes, fluorine- and sulfo-contg.; membrane exchange humidifiers for use in humidifying reactant streams for solid polymer **electrolyte** fuel **cell** systems)

IT Polyethers, uses
(**polysulfone-**; membrane exchange humidifiers for use in humidifying reactant streams for solid polymer **electrolyte** fuel **cell** systems)

IT **9002-88-4**, Polyethylene
(membrane exchange humidifiers for use in humidifying reactant streams for solid polymer **electrolyte** fuel **cell** systems)

IT 66796-30-3, Nafion 117 108778-13-8, Biodyne 138636-78-9, Supor 358787-79-8, Osmonics MX50 358787-80-1, Osmonics Qx 358787-81-2, Pervap 2256 358787-82-3, Pall SG 376634-03-6, Osmonics CV
(membrane exchange humidifiers for use in humidifying reactant streams for solid polymer **electrolyte** fuel **cell** systems)

IT **1344-28-1, Alumina**, uses 7631-86-9, Silica, uses
(membrane exchange humidifiers for use in humidifying reactant

streams for solid polymer **electrolyte** fuel **cell** systems)

IT 9002-89-5, Polyvinyl alcohol 9003-20-7, Polyvinyl acetate 9004-35-7, Cellulose acetate
(membrane exchange humidifiers for use in humidifying reactant streams for solid polymer **electrolyte** fuel **cell** systems)

IT 9004-34-6, Cellulose, uses
(paper; membrane exchange humidifiers for use in humidifying reactant streams for solid polymer **electrolyte** fuel **cell** systems)

L120 ANSWER 14 OF 30 HCA COPYRIGHT 2004 ACS on STN

135:229381 Membrane exchange humidifier for humidifying reactant streams for solid polymer **electrolyte** fuel **cell** systems.
Mossman, Alexander D. (Ballard Power Systems Inc., Can.). PCT Int. Appl. WO 2001067533 A2 **20010913**, 40 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (English). CODEN: PIXXD2. APPLICATION: WO 2001-CA291 20010308. PRIORITY: US 2000-521228 20000308; US 2001-800751 20010307.

AB A membrane exchange humidifier employs a water **permeable membrane** comprising a **microporous** polymer and hydrophilic additive. In operation, the membrane preferably has favorable water transmission properties and resists transmission of reactant gas or other components. The membrane is suitable for use even when permeable in its dry condition to the wet or dry gases in the humidifier, and/or when the wet and dry gases are of different compn. By wetting the membrane, the presence of an amt. of liq. water in the wet gas can reduce gas transmission through the membrane to an acceptable level. The humidifier is useful in fuel cell systems in which a reactant gas supply stream, such as the oxidant supply stream, is humidified primarily using water vapor from a fuel cell reactant exhaust stream. The humidifier is particularly suitable for use in conjunction with solid polymer fuel cell systems. The improved mech. and welding properties of the membrane allow for a simpler humidifier configuration.

IT **1344-28-1, Alumina**, uses
(membrane exchange humidifier for humidifying reactant streams for solid polymer **electrolyte** fuel **cell** systems)

RN 1344-28-1 HCA

CN Aluminum oxide (Al2O3) (8CI, 9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
IT **9002-88-4**, Duramic
(silica filled, Duramic and Teslin 010; membrane exchange humidifier for humidifying reactant streams for solid polymer **electrolyte** fuel **cell** systems)
RN 9002-88-4 HCA
CN Ethene, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 74-85-1
CMF C2 H4

$H_2C{=}CH_2$

IC ICM H01M008-04
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST membrane exchange humidifier polymer **electrolyte** fuel **cell** system
IT Polyolefin fibers
(ethylene; membrane exchange humidifier for humidifying reactant streams for solid polymer **electrolyte** fuel **cell** systems)
IT Polyoxyalkylenes, uses
(fluorine- and sulfo-contg., ionomers; membrane exchange humidifier for humidifying reactant streams for solid polymer **electrolyte** fuel **cell** systems)
IT Fuel cells
Membranes, nonbiological
Wetting
(membrane exchange humidifier for humidifying reactant streams for solid polymer **electrolyte** fuel **cell** systems)
IT Polyamide fibers, uses
(membrane exchange humidifier for humidifying reactant streams for solid polymer **electrolyte** fuel **cell** systems)
IT Polyesters, uses
Polysulfones, uses
(membrane exchange humidifier for humidifying reactant streams for solid polymer **electrolyte** fuel **cell** systems)
IT Polymers, uses
(**microporous**; **membrane** exchange humidifier for humidifying reactant streams for solid polymer

electrolyte fuel **cell** systems)

IT **Polysulfones**, uses
(polyether-; membrane exchange humidifier for humidifying reactant streams for solid polymer **electrolyte** fuel **cell** systems)

IT Fluoropolymers, uses
(polyoxyalkylene-, sulfo-contg., ionomers; membrane exchange humidifier for humidifying reactant streams for solid polymer **electrolyte** fuel **cell** systems)

IT Ionomers
(polyoxyalkylenes, fluorine- and sulfo-contg.; membrane exchange humidifier for humidifying reactant streams for solid polymer **electrolyte** fuel **cell** systems)

IT Polyethers, uses
(**polysulfone-**; membrane exchange humidifier for humidifying reactant streams for solid polymer **electrolyte** fuel **cell** systems)

IT Synthetic rubber, uses
(silica filled; membrane exchange humidifier for humidifying reactant streams for solid polymer **electrolyte** fuel **cell** systems)

IT **1344-28-1, Alumina**, uses 7631-86-9, Silica, uses
(membrane exchange humidifier for humidifying reactant streams for solid polymer **electrolyte** fuel **cell** systems)

IT 66796-30-3, Nafion 117 108778-13-8, Biodyne 138636-78-9, Supor 358787-72-1, Oxmonics CV 358787-79-8, Osmonics MX 50 358787-80-1, Osmonics QX 358787-81-2, Pervap 2256 358787-82-3, Pall SG
(membrane exchange humidifier for humidifying reactant streams for solid polymer **electrolyte** fuel **cell** systems)

IT 7732-18-5, Water, uses 9003-20-7, Polyvinyl acetate 9004-35-7, Cellulose acetate
(membrane exchange humidifier for humidifying reactant streams for solid polymer **electrolyte** fuel **cell** systems)

IT 9004-34-6, Cellulose, uses
(paper; membrane exchange humidifier for humidifying reactant streams for solid polymer **electrolyte** fuel **cell** systems)

IT **9002-88-4**, Duramic
(silica filled, Duramic and Teslin 010; membrane exchange humidifier for humidifying reactant streams for solid polymer **electrolyte** fuel **cell** systems)

L120 ANSWER 15 OF 30 HCA COPYRIGHT 2004 ACS on STN
135:109743 Fuel cell with proton conducting **membrane**. Peled,

Emanuel; Duvdevani, Tair; Melman, Avi; Aharon, Adi (Ramot University Authority for Applied Research and Industrial Development Ltd., Israel). PCT Int. Appl. WO 2001054216 A2 **20010726**, 48 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (English). CODEN: PIXXD2. APPLICATION: WO 2001-IL55 20010118. PRIORITY: US 2000-484267 20000118; US 2000-604297 20000626.

AB The present invention provides improved, low-cost fuel cells having reduced fuel crossover, reduced sensitivity to metal ion impurities and ability to operate under a broad range of temps. The invention further provides improved methods for catalyst prepn. and a new integrated flow field system for use in H2/O2 fuel cells.

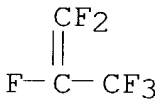
IT **9011-17-0**, Hexafluoropropylene-vinylidene fluoride copolymer (binder; fuel cell with proton conducting **membrane**)

RN 9011-17-0 HCA

CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)

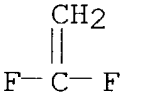
CM 1

CRN 116-15-4
CMF C3 F6



CM 2

CRN 75-38-7
CMF C2 H2 F2



IC ICM H01M008-00

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

ST fuel cell proton conducting **membrane**
IT Sulfonic acids, uses
(alkanesulfonic; fuel cell with proton conducting **membrane**)
IT Sulfonic acids, uses
(alkene, fluoro, polymers; fuel cell with proton conducting **membrane**)
IT Sulfonic acids, uses
(arenesulfonic, perfluoro; fuel cell with proton conducting **membrane**)
IT Sulfonic acids, uses
(arenesulfonic; fuel cell with proton conducting **membrane**)
IT Fluoropolymers, uses
(binder; fuel cell with proton conducting **membrane**)
IT Catalysts
(electrocatalysts; fuel cell with proton conducting **membrane**)
IT Polyoxyalkylenes, uses
(fluorine- and sulfo-contg., ionomers; fuel cell with proton conducting **membrane**)
IT Fuel **cell electrolytes**
Fuel cells
(fuel **cell** with proton conducting **membrane**)
IT Heteropoly acids
(fuel cell with proton conducting **membrane**)
IT Secondary **batteries**
(lithium; fuel cell with proton conducting **membrane**)
IT Sulfonic acids, uses
(perfluoroolefin; fuel cell with proton conducting **membrane**)
IT **Polysulfones**, uses
(polyamide-, binder; fuel cell with proton conducting **membrane**)
IT Fluoropolymers, uses
(polyoxyalkylene-, sulfo-contg., ionomers; fuel cell with proton conducting **membrane**)
IT Ionomers
(polyoxyalkylenes, fluorine- and sulfo-contg.; fuel cell with proton conducting **membrane**)
IT Polyamides, uses
(**polysulfone**-, binder; fuel cell with proton conducting **membrane**)
IT Cobalt alloy, nonbase
Iron alloy, nonbase
Nickel alloy, nonbase
Platinum alloy, base
Silver alloy, nonbase

(fuel cell with proton-conducting **membrane**)

IT 9002-83-9 9002-84-0, Ptfe 9011-14-7, Pmma **9011-17-0**, Hexafluoropropylene-vinylidene fluoride copolymer 24937-79-9, Pvdf
(binder; fuel cell with proton conducting **membrane**)

IT 7440-06-4, Platinum, uses
(fuel cell with proton conducting **membrane**)

IT 71-43-2D, Benzene, fluoro derivs., polymers, uses 104-15-4, uses 5329-14-6, Sulfamic acid 7440-18-8, Ruthenium, uses 7487-88-9, Magnesium sulfate, uses 7664-38-2, Phosphoric acid, uses 7664-93-9, Sulfuric acid, uses 7733-02-0, Zinc sulfate 7757-82-6, Sodium sulfate, uses 7778-80-5, Potassium sulfate, uses 7785-87-7, Manganese sulfate 7786-81-4, Nickel sulfate 9002-86-2, Polyvinyl chloride 9003-05-8, Polyacrylamide 10043-01-3, Aluminum sulfate 10124-43-3, Cobalt sulfate 10294-54-9, Cesium sulfate 26914-43-2D, fluoro derivs., polymers
(fuel cell with proton conducting **membrane**)

IT 1343-93-7, Phosphotungstic acid 1343-98-2, Silicic acid 12027-38-2
(fuel cell with proton conducting **membrane**)

IT 50-00-0, Formaldehyde, uses 56-81-5, Glycerol, uses 64-18-6, Formic acid, uses 67-56-1, Methanol, uses 107-21-1, Ethylene glycol, uses 107-31-3, Methyl formate 109-94-4, Ethyl formate 144-62-7, Oxalic acid, uses 553-90-2, Dimethyl oxalate 1303-86-2, boron oxide b2o3, uses 1314-23-4, Zirconia, uses 1344-28-1, Alumina, uses 7440-22-4, Silver, uses 7782-42-5, Graphite, uses 10043-35-3, Boric acid (H3BO3), uses 12604-59-0, Hastelloy C-276 12651-23-9, Titanium hydroxide 12688-15-2, Zirconium hydroxide 12713-25-6, Zirconium hydroxide oxide 12738-89-5, Titanium hydroxide oxide 13463-67-7, Titania, uses 21645-51-2, Aluminum hydroxide, uses 24623-77-6, Aluminum hydroxide oxide
(fuel cell with proton conducting **membrane**)

IT 7631-86-9, Silica, uses
(hydrated; fuel cell with proton conducting **membrane**)

L120 ANSWER 16 OF 30 HCA COPYRIGHT 2004 ACS on STN
135:95194 Polymeric mesoporous separator elements for laminated lithium-ion rechargeable **batteries**. Dupasquier, Aurelien; Tarascon, Jean-marie (Valence Technology, Inc., Fr.). U.S. Pat. Appl. Publ. US 2001008734 A1 **20010719**, 9 pp. (English). CODEN: USXXCO. APPLICATION: US 1998-190353 19981112.

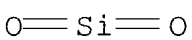
AB A mesoporous polymeric membrane for use as an ionically-conductive inter-electrode separator in a rechargeable **battery** cell is prepd. from a coatable compn. comprising a polymeric material, a volatile fluid solvent for the polymeric material, and a second fluid miscible with and of lesser volatility than the solvent, the second fluid being a nonsolvent exhibiting no significant solvency for the polymeric material. A layer is cast from the compn. to form

a layer which is gelled and solidified to a self-supporting membrane by volatilizing the solvent and nonsolvent coating vehicle fluids under conditions in which the solvent volatilizes at a rate substantially faster than that of the nonsolvent. As a result the polymeric material initially gels in the more nonsolvent-predominant regions of the layer and isolates the nonsolvent as droplets substantially uniformly distributed throughout a matrix of polymeric material. The nonsolvent is subsequently volatilized from the droplets to yield a like distribution of mesopore voids throughout the membrane matrix. The **porous membrane** is capable of absorbing significant amts. of electrolyte soln. to provide suitable ionic cond. for use in rechargeable **battery** cells. The addn. of inert particulate **filler** to the coating compn. provides further strength in the body of the membrane and, due to preferential accumulation of particles in the dispersed nonsolvent droplets, provides particulate support within the membrane mesopores which prevents collapse of the voids at cell fabrication laminating temps. and thus maintains electrolyte absorption capability.

IT **7631-86-9, Fumed silica,** uses
(colloidal; polymeric mesoporous separator elements for laminated lithium-ion rechargeable **batteries**)

RN 7631-86-9 HCA

CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



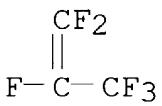
IT **9011-17-0,** Hexafluoropropylene-vinylidene fluoride copolymer
(polymeric mesoporous separator elements for laminated lithium-ion rechargeable **batteries**)

RN 9011-17-0 HCA

CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)

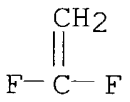
CM 1

CRN 116-15-4
CMF C3 F6



CM 2

CRN 75-38-7
CMF C2 H2 F2



IC ICM H01M002-16
ICS B29C065-00
NCL 429254000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST lithium **battery** polymer mesoporous separator
IT Secondary **batteries**
(lithium; polymeric mesoporous separator elements for laminated lithium-ion rechargeable **batteries**)
IT Absorption
Battery electrolytes
Secondary **battery** separators
(polymeric mesoporous separator elements for laminated lithium-ion rechargeable **batteries**)
IT Polyesters, uses
(polymeric mesoporous separator elements for laminated lithium-ion rechargeable **batteries**)
IT **7631-86-9, Fumed silica,** uses
(colloidal; polymeric mesoporous separator elements for laminated lithium-ion rechargeable **batteries**)
IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate **9011-17-0,** Hexafluoropropylene-vinylidene fluoride copolymer 12057-17-9, lithium manganese oxide limn2o4 21324-40-3, Lithium hexafluorophosphate
(polymeric mesoporous separator elements for laminated lithium-ion rechargeable **batteries**)
IT 7440-44-0, Carbon, uses
(polymeric mesoporous separator elements for laminated lithium-ion rechargeable **batteries**)
IT 64-17-5, Ethanol, uses 67-56-1, Methanol, uses 67-63-0, Isopropanol, uses 67-64-1, Acetone, uses 25038-59-9, Polyethylene terephthalate, uses
(polymeric mesoporous separator elements for laminated lithium-ion rechargeable **batteries**)

L120 ANSWER 17 OF 30 HCA COPYRIGHT 2004 ACS on STN
133:7099 **Membrane** suitable for **electrochemical cells.** Tobinaga, Tekeshi; Mathauer, Klemens; Bronstert, Bernd; Mohwald, Helmut (Basf Aktiengesellschaft, Germany). PCT Int. Appl. WO 2000033406 A1 **20000608,** 40 pp. DESIGNATED

STATES: W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG. (English). CODEN: PIXXD2. APPLICATION: WO 1999-EP9420 19991202. PRIORITY: DE 1998-19855889 19981203.

AB A **membrane** comprises a compn. including: (a) 1 to 99 wt.% of at least one polyurethane elastomer comprising at least one hard segment and at least one soft segment; and (b) 99 to 1 wt.% of a solid, wherein the solid is incorporated in the ≥1 polyurethane elastomer. At least one polyurethane elastomer is a thermoplastic polyurethane elastomer.

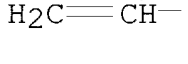
IT **9003-53-6, Polystyrene**
(**membrane** suitable for **electrochem. cells**)

RN 9003-53-6 HCA

CN Benzene, ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 100-42-5
CMF C8 H8



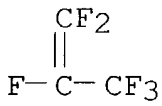
IT **9011-17-0**, Kynar 2801
(**membrane** suitable for **electrochem. cells**)

RN 9011-17-0 HCA

CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)

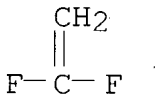
CM 1

CRN 116-15-4
CMF C3 F6



CM 2

CRN 75-38-7
CMF C2 H2 F2



IC ICM H01M006-18
ICS H01B001-12; C08K003-00; C08L075-04; C08J005-10; C08J005-22
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, 39
ST **battery membrane** thermoplastic polyurethane elastomer
IT Urethane rubber, uses
(adipic acid-butanediol-diphenylmethane diisocyanate, Elastollan 680-50; **membrane** suitable for **electrochem. cells**)
IT Urethane rubber, uses
(adipic acid-butanediol-diphenylmethane diisocyanate-ethylene glycol, block, Elastollan S 80A50; **membrane** suitable for **electrochem. cells**)
IT Urethane rubber, uses
(adipic acid-butanediol-diphenylmethane diisocyanate-polytetramethylene glycol, block, Elastollan 1180A10; **membrane** suitable for **electrochem. cells**)
IT Secondary **battery** separators
(**membrane** suitable for **electrochem. cells**)
IT Amides, uses
Carbonates, uses
Fluoropolymers, uses
Imides
Nitrides
Oxides (inorganic), uses
Phosphates, uses
Polyamides, uses
Polyimides, uses
Silicates, uses
Sulfates, uses
Thermoplastic rubber
Urethane rubber, uses
(**membrane** suitable for **electrochem. cells**)
IT Polyesters, uses
(silicone-treated; **membrane** suitable for

electrochem. cells)
IT 7631-86-9, Silica, uses
(colloidal; **membrane** suitable for **electrochem**
. **cells**)
IT 471-34-1, Calcium carbonate, uses 1344-28-1, Alumina, uses
(filler; **membrane** suitable for **electrochem.**
cells)
IT 152522-06-0, Tremin 283-600MST
(filler; **membrane** suitable for **electrochem.**
cells)
IT 9002-84-0, Ptfe 9002-88-4 9003-07-0, Polypropylene
9003-53-6, Polystyrene 24937-79-9, Pvdf
(**membrane** suitable for **electrochem.**
cells)
IT **9011-17-0**, Kynar 2801
(**membrane** suitable for **electrochem.**
cells)
IT 7440-44-0, Carbon, uses
(mesocarbon microbeads; **membrane** suitable for
electrochem. cells)
IT 13983-17-0, Wollastonite
(silane coupling agent-treated; **membrane** suitable for
electrochem. cells)
IT 25038-59-9, Polyethylene terephthalate, uses
(silicone-treated; **membrane** suitable for
electrochem. cells)

L120 ANSWER 18 OF 30 HCA COPYRIGHT 2004 ACS on STN
132:125359 Laser cutting and joining a fluorinated polymer **membrane** to a polymer frame. Williams, Paul Edward; Mitchell, Thomas Anderson; Clark, Duncan Guy (National Power PLC, UK). PCT Int. Appl. WO 2000007254 A1 **20000210**, 28 pp. DESIGNATED STATES: W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG. (English). CODEN: PIXXD2. APPLICATION: WO 1999-GB2335 19990720. PRIORITY: GB 1998-16422 19980728.
AB Method and app. for cutting a fluorinated polymer **membrane** and simultaneously joining it to a polymer frame are disclosed. The method comprises the steps of: (i) contacting a fluorinated polymer **membrane** with a polymer frame at the point where a cut and joint is desired, and (ii) directing at least one laser beam onto the point of contact between the **membrane** and the frame so as to cut the **membrane** and effect a joint to the frame.

Such a method may be useful in processes for the manuf. of filters, heat exchangers, and electrochem. devices such as fuel **cells**, **electrolyzers**, and **secondary batteries**.

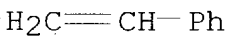
IT **9003-53-6, Polystyrene 9011-17-0,** Hexafluoropropylene-vinylidene fluoride copolymer (laser cutting and joining fluorinated polymer **membrane** to polymer frame)

RN 9003-53-6 HCA

CN Benzene, ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 100-42-5
CMF C8 H8

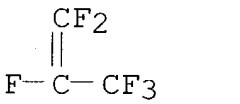


RN 9011-17-0 HCA

CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)

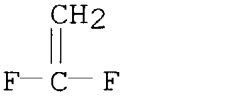
CM 1

CRN 116-15-4
CMF C3 F6



CM 2

CRN 75-38-7
CMF C2 H2 F2



IC ICM H01M008-02
ICS H01M010-02; H01M002-18; C25B013-00; B01D065-00; B01D063-08; H01M008-10; B23K026-14; B23K026-00

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 38, 47, 72
ST laser cutting joining fluorinated polymer **membrane** frame
IT Polyoxyalkylenes, uses
(fluorine- and sulfo-contg., ionomers; laser cutting and joining fluorinated polymer **membrane** to polymer frame)
IT Polyoxyalkylenes, uses
(fluorine-contg., sulfo-contg., ionomers; laser cutting and joining fluorinated polymer **membrane** to polymer frame)
IT Cation exchange **membranes**
Electrolytic cells
Filters
Fuel cells
Heat exchangers
Ion exchange **membranes**
Joining
Laser cutting
Secondary **batteries**
(laser cutting and joining fluorinated polymer **membrane** to polymer frame)
IT Fluoropolymers, uses
(laser cutting and joining fluorinated polymer **membrane** to polymer frame)
IT Polyamides, uses
Polyesters, uses
(laser cutting and joining fluorinated polymer **membrane** to polymer frame)
IT Acetals
(polymers; laser cutting and joining fluorinated polymer **membrane** to polymer frame)
IT Fluoropolymers, uses
Fluoropolymers, uses
(polyoxyalkylene-, sulfo-contg., ionomers; laser cutting and joining fluorinated polymer **membrane** to polymer frame)
IT Ionomers
(polyoxyalkylenes, fluorine- and sulfo-contg.; laser cutting and joining fluorinated polymer **membrane** to polymer frame)
IT 9002-81-7D, Polyoxymethylene, chlorinated 9002-84-0, Ptfe
9002-86-2, Pvc 9002-88-4, Polyethylene 9003-07-0, Polypropylene
9003-53-6, Polystyrene 9010-79-1D,
Ethylene-propylene copolymer, fluorinated **9011-17-0,**
Hexafluoropropylene-vinylidene fluoride copolymer 24937-79-9,
Polyvinylidene fluoride 24981-14-4, Polyvinyl fluoride
25038-59-9, Polyethylene terephthalate, uses 25038-71-5,
Ethylene-tetrafluoroethylene copolymer 25067-11-2,
Hexafluoropropylene-tetrafluoroethylene copolymer 25101-39-7,
Chlorotrifluoroethylene-propylene copolymer 25101-45-5,
Chlorotrifluoroethylene-ethylene copolymer 25120-07-4,
Polyhexafluoropropylene 25684-76-8, Tetrafluoroethylene-vinylidene

fluoride copolymer 26160-99-6, Ethylene-Hexafluoropropylene copolymer 27029-05-6, Propylene-tetrafluoroethylene copolymer 52991-93-2, Propylene-Hexafluoropropylene copolymer 77950-55-1, Nafion 115 221219-87-0, Fluoramide homopolymer 256388-12-2, Flemion SH 80
(laser cutting and joining fluorinated polymer **membrane** to polymer frame)

IT 124-38-9, Carbon dioxide, uses
(laser; laser cutting and joining fluorinated polymer **membrane** to polymer frame)

L120 ANSWER 19 OF 30 HCA COPYRIGHT 2004 ACS on STN
131:172705 Ion conductive matrixes and their use in electrochemical devices. Peled, Emanuel; Duvdevani, Tair; Melman, Avi (Ramot University Authority for Applied Research & Industrial Development, Israel). PCT Int. Appl. WO 9944245 A1 **19990902**, 35 pp. DESIGNATED STATES: W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG. (English). CODEN: PIXXD2. APPLICATION: WO 1999-IL109 19990222. PRIORITY: IL 1998-123419 19980224; IL 1998-126830 19981030.

AB The present invention provides an ion conducting matrix comprising: (i) 5 to 60% by vol. of an inorg. powder having a good aq. electrolyte absorption capacity, (ii) 5 to 50% by vol. of a polymeric binder that is chem. compatible with an aq. electrolyte, and (iii) 10 to 90% by vol. of an aq. electrolyte, wherein the inorg. powder comprises essentially sub-micron particles. The present invention further provides a **membrane** being a film made of the matrix of the invention and a composite electrode comprising 10 to 70% by vol. of the matrix of the invention.

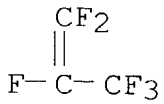
IT **9011-17-0**, Polyvinylidene fluoride hexafluoropropylene
(binder; ion conductive matrixes and their use in electrochem. devices)

RN 9011-17-0 HCA

CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)

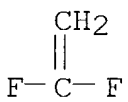
CM 1

CRN 116-15-4
CMF C3 F6



CM 2

CRN 75-38-7
CMF C2 H2 F2



IC ICM H01M004-58
ICS H01M006-14; H01M006-18; H01M006-16; H01M004-86; H01M004-62; H01M004-34; H01M004-32; H01M004-50; H01M004-42; H01M006-00; C25B011-04; C25B013-00; C25B009-00; C08J005-20; B23P019-00

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, 72, 76

ST **battery** ion conductive matrix; capacitor ion conductive matrix

IT Primary **batteries**
(Zn-air; ion conductive matrixes and their use in electrochem. devices)

IT Fuel cells
Membranes, nonbiological
(ion conductive matrixes and their use in electrochem. devices)

IT **Polysulfones**, uses
Polysulfones, uses
(polyamide-, binder; ion conductive matrixes and their use in electrochem. devices)

IT Polyamides, uses
Polyamides, uses
(**polysulfone**-, binder; ion conductive matrixes and their use in electrochem. devices)

IT **Electrolytic cells**
(water; ion conductive matrixes and their use in electrochem. devices)

IT 9002-84-0 9002-86-2, Pvc 9003-05-8, Polyacrylamide 9011-14-7, Pmma **9011-17-0**, Polyvinylidene fluoride hexafluoropropylene 24937-79-9 24981-14-4, Polyvinyl fluoride 25014-41-9, Polyacrylonitrile
(binder; ion conductive matrixes and their use in electrochem. devices)

L120 ANSWER 20 OF 30 HCA COPYRIGHT 2004 ACS on STN
131:20054 Porous vinylidene fluoride polymer membranes with excellent mechanical property and heat and chemical resistance. Ishibashi, Yuzuru; Takamura, Shoichi (Asahi Chemical Industry Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 11152366 A2 **19990608** Heisei, 6 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1997-318513 19971119.

AB The membranes, useful for filtration and **battery** separators, comprise vinylidene fluoride (I) homopolymer and copolymers, 90-98% of which are composed of I monomer unit. N-methyl-2-pyrrolidone contg. I homopolymer (Kynar 761) 13, I-hexafluoropropylene copolymer (Kynar 2801) 4, and poly(vinylpyrrolidone) (K-30) 15 parts was cast on a **glass** plate at 50°, coagulated, and dried to give a **membrane** showing H2O **permeability** 21,000 L/m2-h-0.1 MPa at 25°, tensile breaking strength 6.0 MPa, breaking elongation 70%, and good heat and chem. resistance.

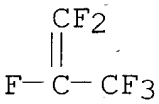
IT **9011-17-0**, Kynar 2801
(porous vinylidene fluoride polymer membranes with excellent mech. property and heat and chem. resistance)

RN 9011-17-0 HCA

CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)

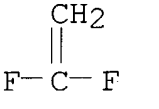
CM 1

CRN 116-15-4
CMF C3 F6



CM 2

CRN 75-38-7
CMF C2 H2 F2



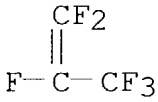
IC ICM C08J009-28
ICS C08J009-28; B01D071-34; H01M002-16; C08L027-12

CC 38-3 (Plastics Fabrication and Uses)
ST vinylidene fluoride polymer **porous membrane;**
heat resistance vinylidene fluoride polymer membrane; chem resistance vinylidene fluoride copolymer membrane
IT **9011-17-0,** Kynar 2801 24937-79-9
(porous vinylidene fluoride polymer membranes with excellent mech. property and heat and chem. resistance)

L120 ANSWER 21 OF 30 HCA COPYRIGHT 2004 ACS on STN
129:97753 Thin film electrolytes for lithium **batteries.**
Hamanaka, Katsuhiko; Yokoyama, Takayuki (Asahi Chemical Industry Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 10189049 A2 **19980721** Heisei, 4 pp. (Japanese). CODEN: JKXXAF.
APPLICATION: JP 1996-343721 19961224.
AB The electrolytes have a Li salt soln. impregnated in and immobilized by **microporous** polyolefin **membranes,** having thickness 10-60 μm, av. pore diam. 0.1-0.6 μm, porosity 75-90, open porosity 50-90%, and tensile strength ≥130kg/cm2 in the length direction.
IT **9011-17-0,** Hexafluoropropylene-vinylidene fluoride copolymer
(thin film electrolytes contg. lithium salt solns. impregnated in **porous** polyolefin **membrane** laminates for lithium **batteries**)
RN 9011-17-0 HCA
CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)

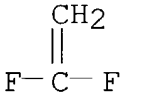
CM 1

CRN 116-15-4
CMF C3 F6



CM 2

CRN 75-38-7
CMF C2 H2 F2



IT **9002-88-4**, Polyethylene
(thin film electrolytes contg. lithium salt solns. impregnated in **porous** polyolefin **membranes** for lithium **batteries**)
RN 9002-88-4 HCA
CN Ethene, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 74-85-1
CMF C2 H4

$H_2C{=}CH_2$

IC ICM H01M010-40
ICS C08J009-00
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST lithium **battery** electrolyte polyolefin **microporous membrane**
IT **Battery** electrolytes
(thin film electrolytes contg. lithium salt solns. impregnated in **porous** polyolefin **membranes** for lithium **batteries**)
IT 117-81-7, Dop 7631-86-9, Nipsil lp, uses
(in manuf. of thin film electrolytes contg. lithium salt solns. impregnated in **porous** polyolefin **membranes** for lithium **batteries**)
IT **9011-17-0**, Hexafluoropropylene-vinylidene fluoride copolymer
(thin film electrolytes contg. lithium salt solns. impregnated in **porous** polyolefin **membrane** laminates for lithium **batteries**)
IT 96-48-0, γ-Butyrolactone 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate **9002-88-4**, Polyethylene 14283-07-9, Lithium fluoroborate
(thin film electrolytes contg. lithium salt solns. impregnated in **porous** polyolefin **membranes** for lithium **batteries**)

L120 ANSWER 22 OF 30 HCA COPYRIGHT 2004 ACS on STN
127:208138 Electrode for nonaqueous electrolyte **battery**.
Okada, Mikio; Yasuda, Hideo (Japan Storage Battery Co., Ltd., Japan; Okada, Mikio; Yasuda, Hideo). PCT Int. Appl. WO 9729522 A1 **19970814**, 23 pp. DESIGNATED STATES: W: CN, US; RW: DE, FR. (Japanese). CODEN: PIXXD2. APPLICATION: WO 1997-JP350 19970210. PRIORITY: JP 1996-47994 19960209.
AB The electrodes are are composed of active mass particles coated with a **porous membrane** or contg. a **filler**

in the pores of the particles. These electrodes have high safety.

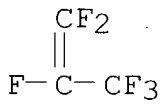
IT **9011-17-0**, Vinylidene fluoride-hexafluoropropylene copolymer
(manuf. of mesophase carbon particles with porous polymer coatings or with polymer filled pores for anodes in secondary lithium **batteries**)

RN 9011-17-0 HCA

CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)

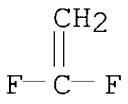
CM 1

CRN 116-15-4
CMF C3 F6



CM 2

CRN 75-38-7
CMF C2 H2 F2



IC ICM H01M004-36
ICS H01M004-38; H01M004-40; H01M004-42; H01M004-44; H01M004-46; H01M004-48; H01M004-50; H01M004-52; H01M004-54; H01M004-56; H01M004-57; H01M004-58; H01M004-60

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **battery** electrode active mass porous coating; safety **battery** electrode active mass coating

IT **Battery** electrodes
(manuf. of active mass particles with porous polymer coatings or with polymer filled pores for secondary **battery** electrodes)

IT **Battery** anodes
(manuf. of mesophase carbon particles with porous polymer coatings or with polymer filled pores for anodes in secondary lithium **batteries**)

IT Carbonaceous materials (technological products)
(manuf. of mesophase carbon particles with porous polymer coatings or with polymer filled pores for anodes in secondary

lithium **batteries**)

IT 616-38-6, Dimethyl carbonate 7447-41-8, Lithium chloride, uses
(in manuf. of porous vinylidene fluoride-hexafluoropropylene copolymer film on mesophase carbon particles for anodes in secondary lithium **batteries**)

IT 9002-86-2, Pvc
(manuf. of mesophase carbon particles with PVC filled pores for anodes in secondary lithium **batteries**)

IT **9011-17-0**, Vinylidene fluoride-hexafluoropropylene copolymer 25014-41-9, Polyacrylonitrile
(manuf. of mesophase carbon particles with porous polymer coatings or with polymer filled pores for anodes in secondary lithium **batteries**)

L120 ANSWER 23 OF 30 HCA COPYRIGHT 2004 ACS on STN
126:188473 Secondary solid polymer electrolyte **batteries** with high thermal stability. Tsucha, Kenji; Aoki, Yoshasu (Toshiba Battery, Japan). Jpn. Kokai Tokkyo Koho JP 09022726 A2 **19970121** Heisei, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1995-171135 19950706.

AB The **batteries** have a cathode contg. a nonaq. electrolyte soln., an anode contg. a Li intercalating carbonaceous material and the electrolyte soln., and an electrolyte membrane contg. the electrolyte soln. and a polymer retaining the soln.; where the electrolyte **membrane** has a **microporous** polyolefin film held between 2 electrolyte-polymer layers.

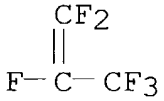
IT **9011-17-0**, Hexafluoropropylene-vinylidene fluoride copolymer
(porous polyolefin films in electrolyte membranes contg. nonaq. electrolyte solns. and fluoropolymers for secondary lithium **batteries**)

RN 9011-17-0 HCA

CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)

CM 1

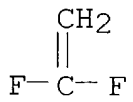
CRN 116-15-4
CMF C3 F6



CM 2

CRN 75-38-7

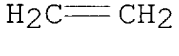
CMF C2 H2 F2



IT **9002-88-4,** Polyethylene
(porous polyolefin films in electrolyte membranes contg. nonaq. electrolyte solns. and fluoropolymers for secondary lithium **batteries**)
RN 9002-88-4 HCA
CN Ethene, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 74-85-1
CMF C2 H4



IC ICM H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST lithium **battery** polymer electrolyte polyolefin film; thermal stability polymer electrolyte lithium **battery**
IT **Battery** electrolytes
(porous polyolefin films in electrolyte membranes contg. nonaq. electrolyte solns. and fluoropolymers for secondary lithium **batteries**)
IT Polyolefins
(porous polyolefin films in electrolyte membranes contg. nonaq. electrolyte solns. and fluoropolymers for secondary lithium **batteries**)
IT 96-49-1, Ethylene carbonate 616-38-6, Dimethyl carbonate **9011-17-0,** Hexafluoropropylene-vinylidene fluoride copolymer 14283-07-9, Lithium fluoroborate
(porous polyolefin films in electrolyte membranes contg. nonaq. electrolyte solns. and fluoropolymers for secondary lithium **batteries**)
IT **9002-88-4,** Polyethylene
(porous polyolefin films in electrolyte membranes contg. nonaq. electrolyte solns. and fluoropolymers for secondary lithium **batteries**)

L120 ANSWER 24 OF 30 HCA COPYRIGHT 2004 ACS on STN
110:234635 Ionic semiconductor materials and their applications. Peck, Robert L. (T and G. Corp., USA). U.S. US 4797190 A

19890110, 16 pp. (English). CODEN: USXXAM. APPLICATION: US 1986-915994 19861006.

AB The materials having a temp.-dependent ion-transport rate comprise an inert man-made polymeric matrix and a hydrogel. The mols. of the hydrogel are substantially uniformly dispersed in the matrix to form a composite structure where the contact between hydrogel mols. is minimized by the matrix and the formation of channels is limited, the composite allowing the transfer of ions and preventing the passage of unionized matter. The hydrogel comprises .apprx.10-50 wt.% of the dry composite, and the bonding between the hydrogel mols. and the matrix is sufficient to prevent their leach-out from the composite. The matrix is selected from poly(vinylidene chloride), PVC, poly(vinylidene fluoride), polyethylene, polypropylene, polyurethane, and PhOH-HCHO resin. The hydrogel is selected from polyethylene oxide, poly(acrylic acid) and polyacrylamide or devised from hydroxyethyl cellulose, gelatin, pectin, cellulose, and starch. When the composite seps. H2SO4 and CuSO4 electrolytes and a p.d. is applied across the composite, the current attributable to Cu2+ diffusion is ≤16% of the equil. current. The composite materials may be used in **batteries** and fuel cells, for water purifn., as solid polymeric electrolytes, in breathable waterproof coatings, and in numerous other applications for controlled moisture or ion transfer. Various applications of different materials are reported. A Zn-MnO2 **dry-cell battery** with a separator constructed from 30% polyethylene oxide and 70% poly(vinylidene chloride) delivered a current equal to that of a conventional **battery**, and could be repeatably deeply discharged and charged, limited only by irregular replating of the Zn.

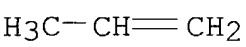
IT **9003-07-0**, Polypropylene
(**membranes** contg. hydrogel and, ionically conductive, for **electrochem.** and **electrolytic cells**)

RN 9003-07-0 HCA

CN 1-Propene, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 115-07-1
CMF C3 H6

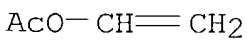


IT **24937-78-8D**, maleated
(**membranes** contg., hydrogel-polymer, ionically conductive, for **electrochem.** and **electrolytic cells**)

RN 24937-78-8 HCA
CN Acetic acid ethenyl ester, polymer with ethene (9CI) (CA INDEX NAME)

CM 1

CRN 108-05-4
CMF C4 H6 O2



CM 2

CRN 74-85-1
CMF C2 H4

IC ICM C25B013-00
NCL 204296000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, 61, 72, 76
ST semiconductor ionic polymer hydrogel; fuel cell ionic semiconductor; **battery** ionic semiconductor; coating waterproof ionic semiconductor; water purifn ionic semiconductor; polyethylene oxide polyvinylidene chloride **battery**; zinc **battery** separator ionic semiconductor; manganese dioxide zinc **battery** separator
IT Phenolic resins, uses and miscellaneous
(coupling agents, **membranes** contg., hydrogel-polymer, ionically conductive, for **electrochem.** and **electrolytic cells**)
IT Urethane polymers, uses and miscellaneous
(**membranes** contg. hydrogel and, ionically conductive, for **electrochem.** and **electrolytic cells**)
IT Coupling agents
(**membranes** contg., hydrogel-polymer, ionically conductive, for **electrochem.** and **electrolytic cells**)
IT Gelatins, uses and miscellaneous
(**membranes** of polymers and silica-contg., ionically conductive, for **electrochem.** and **electrolytic cells**)
IT Electric resistance

(of hydrogel-polymer matrix composite **membranes**)

IT Electrodes
(**battery**, encapsulated with hydrogel-polymer matrix composite)

IT Carbon fibers, uses and miscellaneous
(graphite, **membranes** contg., hydrogel-polymer, ionically conductive, for **electrochem.** and **electrolytic cells**, Fortafil 3)

IT Gels
(hydro-, **membranes** contg. polymer and, ionically conductive, for **electrochem.** and **electrolytic cells**)

IT **Batteries**, secondary
(separators, hydrogel-polymer matrix)

IT 7440-66-6, Zinc, uses and miscellaneous
(anodes, encapsulated with hydrogel-polymer matrix composite, for **batteries**)

IT 7440-44-0 7782-42-5
(carbon fibers, graphite, **membranes** contg., hydrogel-polymer, ionically conductive, for **electrochem** . and **electrolytic cells**, Fortafil 3)

IT 60676-86-0
(catholyte, contg. carbon, in **electrochem.** and **electrolytic cells** contg. ionically conductive hydrogel-polymer **membrane** separators)

IT 9005-53-2, Lignin, uses and miscellaneous 103850-22-2, LICA 12
(coupling agent, **membranes** contg., hydrogel-polymer, ionically conductive, for **electrochem.** and **electrolytic cells**)

IT 7440-32-6D, Titanium, neoalkoxy complexes
(coupling agents, **membranes** contg., hydrogel-polymer, ionically conductive, for **electrochem.** and **electrolytic cells**, LICA 12)

IT 11113-88-5, Silver oxide
(electrodes, encapsulated with hydrogel-polymer matrix composite, for **batteries**)

IT 9002-85-1, Poly(vinylidene chloride) 9002-86-2, Poly(vinyl chloride) **9003-07-0**, Polypropylene 9003-35-4, Formaldehyde-phenol polymer 24937-79-9, Poly(vinylidene fluoride) 120993-93-3, RAP 184
(**membranes** contg. hydrogel and, ionically conductive, for **electrochem.** and **electrolytic cells**)

IT 9000-69-5, Pectin 9003-01-4, Poly(acrylic acid) 9003-05-8 9004-34-6, Cellulose, uses and miscellaneous 9004-62-0, Hydroxyethyl cellulose 9005-25-8, Starch, uses and miscellaneous 25322-68-3 120993-97-7, SGP 147
(**membranes** contg. polymer and, ionically conductive,

for **electrochem.** and **electrolytic cells**)

IT 9005-25-8D, Starch, derivs.
(**membranes** contg. polymer and, ionically conductive, for **electrochem.** and **electrolytic cells**, SGP 147)

IT 7440-44-0, Carbon, uses and miscellaneous
(**membranes** contg. powd., hydrogel-polymer, ionically conductive, for **electrochem.** and **electrolytic cells**)

IT 8061-51-6, Lignosol FTA 8062-15-5D, Lignosulfonic acid, salts **24937-78-8D**, maleated 107666-69-3, Plexar 100
(**membranes** contg., hydrogel-polymer, ionically conductive, for **electrochem.** and **electrolytic cells**)

L120 ANSWER 25 OF 30 HCA COPYRIGHT 2004 ACS on STN
103:218332 Oxygen **permeable membrane.** Susuki, Nobukazu; Tsuruta, Shinji (Toshiba Corp., Japan). Eur. Pat. Appl. EP 154468 A2 **19850911**, 33 pp. DESIGNATED STATES: R: DE, FR, GB. (English). CODEN: EPXXDW. APPLICATION: EP 1985-301213 19850222. PRIORITY: JP 1984-33589 19840224; JP 1984-33593 19840224.

AB A composite membrane (CM) useful for fuel cells, **batteries**, and O sensors, includes a **porous membrane** having **micropores** and an attached thin layer of a metallic oxide in a C matrix. O is able to permeate through, but H2O vapor in air is not allowed to **permeate** through this **membrane.** Thus, 0.4-μ layers of water-contg. or wettable metal oxides with or without a C matrix were formed on **porous polycarbonate membranes** by reactive sputtering of the oxides using Ar (with or without CH4) and a high frequency elec. power to form CMs. O:H2O vapor permeability ratios were 4.3-10.6, 1.4-2.0, and 1.6 + 10-2-0.11 for CMs with C matrix, without C matrix, and for various org. films without metal oxide, resp. Air cathodes were prepd. by bonding a CM to a porous Raney Ni plate or by direct reactive sputtering of the oxides on the plate, followed by the deposition of Pd from a 0.2% Pd chloride soln. over the entire surface of the cathode. The maintenance proportions of discharge properties of air-Zn **batteries** after storage at 45° and 90% relative humidity were 87-96, 83-94, and 40-60% for **batteries** using cathodes with **porous membranes**, without **porous membranes**, and for **batteries** using cathodes without composite membrane, resp.

IT **1344-28-1**, uses and miscellaneous
(cathodes with oxygen **permeable** composite **membrane** contg., nickel-palladium air catalytic, for **batteries**)

RN 1344-28-1 HCA
CN Aluminum oxide (Al2O3) (8CI, 9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
IT **13463-67-7**, uses and miscellaneous
(oxygen **permeable membrane** contg., for **battery** cathodes)
RN 13463-67-7 HCA
CN Titanium oxide (TiO2) (8CI, 9CI) (CA INDEX NAME)

O═Ti═O

IT **9002-88-4 9003-07-0**
(permeability in, of oxygen and water vapor)
RN 9002-88-4 HCA
CN Ethene, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 74-85-1
CMF C2 H4

H_2C═CH_2

RN 9003-07-0 HCA
CN 1-Propene, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 115-07-1
CMF C3 H6

H_3C—CH═CH_2

IC ICM H01M004-86
ICS H01M012-06
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 59, 72
ST metal oxide oxygen **permeable membrane**; cathode **battery** selectively **permeable membrane**; nickel metal oxide air cathode; palladium metal oxide air cathode
IT **Polycarbonates**
(cathodes contg. **porous membrane** of, nickel-palladium air catalytic, for **batteries**)
IT Cathodes
(**battery**, catalytic, palladium-nickel air, with

composite membrane of metal oxide with or without carbon matrix)

IT 1304-28-5, uses and miscellaneous 1305-78-8, uses and miscellaneous 1309-48-4, uses and miscellaneous 1314-11-0, uses and miscellaneous 1314-13-2, uses and miscellaneous **1344-28-1**, uses and miscellaneous 18282-10-5
(cathodes with oxygen **permeable** composite **membrane** contg., nickel-palladium air catalytic, for **batteries**)

IT 7440-02-0, uses and miscellaneous 7440-05-3, uses and miscellaneous
(cathodes, air catalytic, with composite membrane of metal oxide with or without carbon matrix, for **batteries**)

IT 7782-44-7, uses and miscellaneous
(cathodes, palladium-nickel catalytic, with selectively **permeable** composite **membrane**, for **batteries**)

IT 1314-15-4 12018-01-8 12030-49-8 12034-59-2 12036-02-1 12137-27-8
(oxygen **permeable** composite **membrane** contg., for **battery** cathodes)

IT 1308-06-1 1313-99-1, uses and miscellaneous 1317-39-1, uses and miscellaneous 1344-43-0, uses and miscellaneous 7631-86-9, uses and miscellaneous 12036-10-1 12036-21-4 12036-22-5 **13463-67-7**, uses and miscellaneous 18868-43-4
(oxygen **permeable membrane** contg., for **battery** cathodes)

IT 9002-84-0 **9002-88-4** **9003-07-0**
(permeability in, of oxygen and water vapor)

IT 7732-18-5, vapor
(permeability of, in composite oxide-**polycarbonate** membranes)

IT 12036-09-8
(α-, oxygen **permeable** composite **membrane** contg., for **battery** cathodes)

L120 ANSWER 26 OF 30 HCA COPYRIGHT 2004 ACS on STN
101:134111 Air cathodes. (Toshiba Corp., Japan). Jpn. Kokai Tokkyo Koho JP 59058759 A2 **19840404** Showa, 9 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1982-167667 19820928.

AB Air cathodes consist of a porous body having a collector function and O-reducing power. The cathode also has a plasma-coated **porous membrane** with ≤0.1-μ diam. pores and a metal-oxide film on the membrane. Thus, a Raney Ni plate was exposed to pentafluorostyrene, which was plasma-polymd. on the Ni plate. The polymer surface was sputtered with Sn, Zn, Al, Mg, Ca, Sr, Ba, Ti, or Si in an Ar-O atm. The plate was immersed in a Pd chloride soln. to deposit Pd in the pores of the plate by electrolysis and to prep. a cathode for a Zn-air **battery**.

This **battery** had better discharge properties than a **battery** using an air electrode with a Cu2O-, MnO-, NiO-, or Co3O4-coated polymer film.

IT **9003-53-6D**, fluorinated
(cathodes contg. plasma-polymd., palladium air catalytic, **battery**)

RN 9003-53-6 HCA
CN Benzene, ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 100-42-5
CMF C8 H8

$H_2C{=}CH{-}Ph$

IT **1344-28-1**, uses and miscellaneous **13463-67-7**, uses and miscellaneous
(cathodes from palladium-plated plasma-coated, air catalytic, **battery**)

RN 1344-28-1 HCA
CN Aluminum oxide (Al2O3) (8CI, 9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 13463-67-7 HCA
CN Titanium oxide (TiO2) (8CI, 9CI) (CA INDEX NAME)

$O{=}Ti{=}O$

IC H01M004-86; B01D013-00
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST cathode **battery** air palladium; catalyst palladium air cathode; metal oxide palladium air cathode; polyfluorostyrene palladium air cathode
IT Cathodes
(**battery**, catalytic, palladium air)
IT **9003-53-6D**, fluorinated
(cathodes contg. plasma-polymd., palladium air catalytic, **battery**)
IT 1304-28-5, uses and miscellaneous 1305-78-8, uses and miscellaneous 1309-48-4, uses and miscellaneous 1314-11-0, uses and miscellaneous 1314-13-2, uses and miscellaneous **1344-28-1**, uses and miscellaneous 7631-86-9, uses and miscellaneous **13463-67-7**, uses and miscellaneous 18282-10-5
(cathodes from palladium-plated plasma-coated, air catalytic,

battery)
IT 7440-05-3, uses and miscellaneous
(cathodes, air catalytic, **battery**)

L120 ANSWER 27 OF 30 HCA COPYRIGHT 2004 ACS on STN
90:78441 **Membranes** for **battery** separators. Naito, Hirokuni; Yoshimura, Isao (Asahi-Dow Ltd., Japan). Jpn. Tokkyo Koho JP 53041112 B4 **19781031** Showa, 6 pp. (Japanese). CODEN: JAXXAD. APPLICATION: JP 1971-41304 19710610.
AB A foamed resin plate with good fluid flow characteristics, chem. stability, and desirable mech. properties, and useful as a separator for **batteries** and as a **membrane** for electrolysis is obtained from an olefinic polymer in which a part or all of the cells have 10-200-μ openings, a part or all of the cell walls having 0.001-5-μ fine holes, and at least the area coming into contact with the electrolyte is coated with a moist layer. Thus, a blend, contg. low pressure polyethylene 50, C2H4-vinyl acetate copolymer (melt index 6, vinyl acetate 30, bubble wall opener) 50, azobisformamide (chem. foaming agent) 0.8, Zn stearate 0.5, Ca stearate 1.1, and talc 0.6 parts, was extruded with a die at 130-200 and into a water-contg. tank to form a 0.87 mm thick sheet. The sheet was treated with boiling CCl4 to ext. the C2H4-vinyl acetate polymer. The sheet was then immersed for 30 min in 0.4% aq. Na laurylbenzenesulfonate and air dried. The 0.81 mm thick sheet had a porosity of 64, a d. of 0.20 g/cm3, and an elec. resistivity of 0.0027 Ω/dm2, a value useful in a **battery** separator.
IT **9002-88-4 24937-78-8**
(**battery** separators contg.)
RN 9002-88-4 HCA
CN Ethene, homopolymer (9CI) (CA INDEX NAME)

CM 1

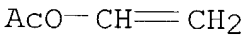
CRN 74-85-1
CMF C2 H4

$H_2C{=}CH_2$

RN 24937-78-8 HCA
CN Acetic acid ethenyl ester, polymer with ethene (9CI) (CA INDEX NAME)

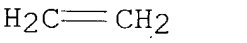
CM 1

CRN 108-05-4
CMF C4 H6 O2



CM 2

CRN 74-85-1
CMF C2 H4



IC C25B013-08
CC 72-2 (Electrochemistry)
ST **battery** separator ethylene vinyl polymer
IT **Batteries**, primary
(separators, ethylene-vinyl acetate copolymer)
IT **9002-88-4 24937-78-8**
(**battery** separators contg.)

L120 ANSWER 28 OF 30 HCA COPYRIGHT 2004 ACS on STN
68:105852 Microporous thermoplastic resin. Duddy, Joseph C. (ESB Inc.). U.S. US 3375208 **19680326**, 5 pp. (English). CODEN: USXXAM. APPLICATION: US 1967-655996 19670726.

AB Microporous thermoplastic resin was prepd. by a method which gave high pore vol., mech. strength and good handling characteristics. The microporous material can be suitable for use as wearing apparel, coatings for fabrics, ion exchange membranes, bandages, and storage **battery** separators. The method treats a thermoplastic resin compn. with a leaching solvent to remove the poreforming agents. A solid, particulate thermoplastic resin, which is insol. in the leaching solvent, is mixed under heat and pressure with a solid which is sol. in the leaching solvent to soften the resins into a plasticized mass. The melt is shaped and contracted with the leaching solvent to remove all of the sol. material making the insol. resin microporous. The thermoplastic resin compn. can be loaded with **filler** and an addnl. pore-forming agent can be added to the resin compn. to give a large pore vol. upon removal of the pore-forming agents. The insol. resin phase can be polyethylene (I), polypropylene, **polystyrene**, poly(styrenesulfonic acid), or poly(vinyl chloride); the sol. phase can be poly(ethylene oxide) (II), polyethylene glycol, Me cellulose, or poly(vinyl-pyrrolidinone). Thus, 50 g. I (DYNK) was mixed with 50 g. II (WSR-35) in a 2-roll rubber mill heated to 125°. After mixing under heat and pressure for several min., the resins were changed into a viscous mass to which 1 g. stearic acid and 400 g. confectioners 10X sugar (pore forming agent) was added and dispersed, the compn. was calendered at .apprx.120° to form a

10-12 mil sheet. The sheet was immersed in cool tap water to remove the sugar and II. The sheet was removed and washed in 2000 cc. warm tap water contg. 10 cc. wetting agent (Aerosol OT). The microporous product did not have a fibrous structure, but it did have a high pore vol. DYNK I has good oxidn. resistance, which makes it useful as a separator in Pb-H2SO4 **batteries.**

IT **9002-88-4P,** preparation
(cellular, foam or porous, by extn. of water-sol. polymers contained therein)

RN 9002-88-4 HCA

CN Ethene, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 74-85-1
CMF C2 H4

$H_2C{=}CH_2$

NCL 260002100

CC 37 (Plastics Fabrication and Uses)

IT Anion exchangers, preparation
Cation exchangers, preparation
(**membranes,** from **porous** ethylene polymers)

IT **9002-88-4P,** preparation
(cellular, foam or porous, by extn. of water-sol. polymers contained therein)

L120 ANSWER 29 OF 30 HCA COPYRIGHT 2004 ACS on STN

68:55972 Electric cell with buffer zone electrolyte. Meyers, William F.; Klopp, Donald W. (Honeywell Inc.). U.S. US 3355328 **19671128,** 5 pp. (English). CODEN: USXXAM. APPLICATION: US 19641027.

AB Anode and cathode corrosion in an elec. cell with highly active anodic and cathodic metals can be eliminated by having the anode immersed in an elec. conductive soln. substantially free of H ions, and the cathode immersed in an elec. conductive acid soln., the anion of which is at least as low as the depolarizing cathode in the electrochem. series. Each of these solns. are in contact thru **semipermeable membranes** with a buffer zone contg. an elec. conductive soln. of a salt, the cation of which is an electropos. metal above Zn and an anion at least as low as the depolarizing cathode in the electrochem. series. The anolyte is sepd. from the buffer zone by a pos. ion-**permeable membrane** contg. bound neg. groups and the catholyte is sepd. from the buffer zone by means of a neg. ion **permeable membrane** contg. bound pos. groups. This makes ion diffusion

between anolyte and catholyte negligible. Two **glass** elbows are joined by means of an inverted **glass** tee to form a U-tube cell. A Mg rod is inserted in one leg of the U-tube as the anode and a carbon rod is inserted into the other leg as a cathode. Between the anolyte section and the tee, a nylon mesh is placed upon which a **polystyrene**, divinyl benzene sulfonated strong acid cation-exchange membrane has been grafted. Between the cathode section and the tee, a nylon mesh is placed upon which a **polystyrene**, divinyl benzene quaternized copolymer has been grafted. The anolyte is M MgClO4 in satd. Mg(OH)2. The catholyte is a M HCl contg. Ca hypochlorite. The hypochlorite reacts with the HCl to give Cl2. The middle or buffer zone is filled with M MgCl2. A potential of 2.0 v. under 2000 ohms load was obtained and 2.8 v. with open circuit at room temp.

IT **9003-53-6**, uses and miscellaneous
(sulfonated, cation-exchanging membranes contg., for magnesium-magnesium perchlorate primary **battery**)

RN 9003-53-6 HCA

CN Benzene, ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 100-42-5
CMF C8 H8

$H_2C{=}CH{-}Ph$

NCL 136093000

CC 77 (Electrochemistry)

IT Anodes
(**battery**, **primary**, magnesium, in **cell** with buffer zone electrolyte contg. magnesium chloride)

IT Membranes
(cation-exchanging, in magnesium-magnesium perchlorate primary **batteries** buffer zone electrolyte of magnesium chloride)

IT **Batteries**, primary
(magnesium-magnesium perchlorate, with buffer zone electrolyte of magnesium chloride)

IT Cation exchangers, uses and miscellaneous
(membranes, in magnesium-magnesium-magnesium perchlorate primary **battery** with buffer zone electrolyte contg. magnesium chloride)

IT 7439-95-4, uses and miscellaneous
(anodes, primary **battery**, with buffer zone electrolyte contg. magnesium chloride)

IT **9003-53-6**, uses and miscellaneous
(sulfonated, cation-exchanging membranes contg., for

magnesium-magnesium perchlorate primary **battery**)

L120 ANSWER 30 OF 30 HCA COPYRIGHT 2004 ACS on STN
65:54391 Original Reference No. 65:10131d-f Activated nickel-foil for use as electrode in alkaline **batteries**. (International Nickel Ltd.). NL 6514589 **19660517**, 3 pp. (Unavailable). PRIORITY: GB 19641116.

AB Ni foil (0.025-0.125 μ) for smaller **batteries** can be activated by anodic treatment in an electrolytic soln. of $NaHCO_3$ when the Ni foil is in contact with an inert, **porous**, elec. nonconductive **membrane** during the activation. The Ni foil may be covered with a material made of nylon, polyethylene, poly(vinyl chloride), **polystyrene**, **glass**, etc. (porosity 5-200 μ). To obtain a uniformly activated layer, a texture with uniform porosity should be used. This activated Ni foil may be further subjected to anodic treatment in the absence of the membrane. Thus, Ni foil was immersed as anode in a soln. contg. 90 g./l. $NaHCO_3$. The foil was covered with porous polyethylene, thickness 0.8 mm., size of pores 50 μ, max. passage of air of 150,000 l./min./cm.2 at a pressure of 203 mm. water. The soln. was kept at 60°, and the pH was kept const. by passing CO_2. Using a c.d. of 200 μamp./cm.2 for 2 hrs., the activated foil showed a capacity of 10 μamp. hrs./cm.2 The activated foil was subjected to the same treatment for 4 hrs. but without using the membrane, and showed a capacity of 25 μamp. hrs./cm.2

IT **9002-88-4**, Ethylene polymers
(membranes from, in Ni foil storage **battery** anode activation by anodic treatment)

RN 9002-88-4 HCA
CN Ethene, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 74-85-1
CMF C2 H4

$H_2C{=}CH_2$

IC H01M
CC 15 (Electrochemistry)

IT Membranes
(in nickel foil storage **battery** anode activation by anodic treatment)

IT Anodes and(or) Positive electrodes
(stainless steel, Ni, **porous membranes** inactivation by anodic treatment of)

IT 7440-02-0, Nickel

(anodes, storage-**battery, porous**
membranes in activation by anodic treatment of)
IT **9002-88-4,** Ethylene polymers
(membranes from, in Ni foil storage **battery** anode
activation by anodic treatment)